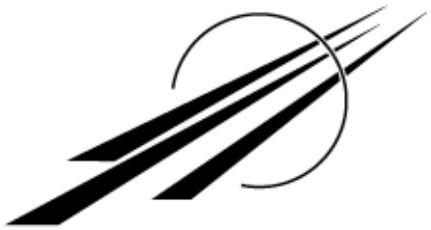


# Investment Strategies Committee
# Final Report
## November, 2000

# Blue Ribbon Commission on Transportation Investment Strategies Committee

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# Summary

The Blue Ribbon Commission on Transportation (BRCT, or, the Commission) recommends investing in the transportation improvements that best meet the Commission's Benchmarks. The Benchmarks are standards for improvements in transportation over the next twenty years. The overarching investment strategy is:

> **Invest—to achieve transportation system benchmarks—in the most effective mix of strategies in the most heavily traveled corridors, using a corridor approach to transportation planning and funding**.
> (Option 1 of the *Draft Accords and Options* of the Blue Ribbon Commission on Transportation).

As defined by the BRCT's Benchmark Committee, a benchmark is a measure of some aspect of transportation system performance. The measure may show a current condition or a past trend, which it then compares to some standard or target. That target may be absolute or relative (e.g., a national average). The idea is that the achievement of the target can be influenced through direct intervention or investment decisions.[1] This report recommends investment policies the state should follow to reach the Commission's Benchmarks.

The policies are divided into four categories as follows:

1. Preserve the transportation system
2. Optimize the transportation system
3. Expand the transportation system
4. Improve the decision-making process for transportation investments

Following are 13 policies in these four categories. Some are new ways of addressing important transportation issues in the state. Others strengthen current policies. The policies vary in specificity, depending on the nature of the transportation issue addressed, and the amount of analysis available to support decision-making. Some are specific and based on rigorous analysis. Others leave the specific actions to be determined by decision-makers, and are based on the general approach identified within each policy. The result is a comprehensive approach to transportation investments in Washington State consistent with the charges given to the BRCT.

[1] Blue Ribbon Commission on Transportation, Draft Benchmark Committee Interim Report, May 8, 2000, page 2.

To preserve the transportation system, the committee recommends that State, counties and cities:

1. Prioritize and fund all maintenance, preservation, and safety needs of the existing transportation infrastructure in the state including operating and maintenance costs of passenger rail, transit, and ferries. All agencies and jurisdictions should be required to demonstrate the use of maintenance management systems and, for roadways, pavement management systems, as a condition of receiving their baseline allocation of state funding.

2. Use the most cost-effective pavement surfaces available based on durability.

3. Phase out studded tires or establish a surcharge to recognize the cost of studded tire damage to the roadways.

4. Develop a utility cut ordinance for use throughout the state, or require jurisdictions to adopt a utility accommodation ordinance that must include a section on utility cuts.

To optimize the transportation system, the committee recommends that:

5. Traffic System Management (TSM) and Intelligent Transportation Systems (ITS) policies should be implemented where cost-effective.

6. Traffic Demand Management (TDM) policies should be used to reduce demand on the highway system.

7. Jurisdictions should integrate transportation and land use planning.

8. Congestion pricing should be made a policy option for congested urban areas.

To expand the transportation system, the committee recommends that:

9. Cost-effective system expansions should be made in heavily traveled corridors.

To improve the decision-making process, the committee recommends:

10. The use of benefit-cost analysis in selecting the most effective transportation investments. Multi-modal benefit-cost analysis should be used to the extent possible as it develops.

11. The use of a corridor approach in transportation planning and investing so the most heavily traveled corridors are the highest investment priorities. The most effective mix of strategies in each corridor should be the goal.

12. The transportation decision-making process should be concentrated into a regional approach, with revenue authority granted to regions to address their high priority needs.

13. The state and local transportation authorities should invest in the human resources necessary to supply the technical workforce capable of maintaining, preserving, and improving the transportation system.

Table S-1 shows the relationship between the Commission's Benchmarks and the four categories of investments as follows:

**Table S-1 Benchmarks recommended by the Commission**

| Investment Component | Benchmarks (Numbers Correspond to Benchmark Committee Interim Report) |
|---|---|
| **Preserve the system** | 1. Zero percent of interstate highways in poor condition by 2020.<br>2. Zero percent of major state routes in poor condition by 2020.<br>3. Zero percent of local arterials in poor condition by 2020.<br>4. Zero percent of bridges structurally deficient by 2020.<br>5. Complete seismic safety retrofits of all Level 1 and Level 2 bridges by 2020. |
| **Optimize the system**<br><br>**Expand the system** | 6. Traffic congestion on urban interstate highways no worse than national mean by 2020.<br>7. Delay per driver no worse than national mean by 2020.<br>8. Maintain Vehicle Miles Traveled (VMT) per capita at 2000 levels.<br>9. Increase non-auto share of work trips in urban centers by X% *or* Reverse the downward trend of non-auto share of work trips in urban centers by 2020. |
| **Improve the decision-making process** | 10. Administrative costs as percent of transportation spending at state, county and city levels in most efficient quartile nationally.<br>11. Washington's public transit agencies will achieve the median cost per vehicle hour of comparable size transit agencies nationwide by 2005. |

In short, the route to a better transportation system in Washington is to set Benchmarks and invest in policies to achieve them.

While the Benchmarks set the standards for investing, the Benchmarks are set well into the future to allow the state and local governments time to adjust policies and begin investing to meet the Benchmark goals. For the immediate future, the Investment Strategies Committee suggests an "Action Strategy" to move the state aggressively into the transportation future. The Action Strategy recommendations are as follows:

1. The Governor and State Legislature should ensure that maintenance, preservation, and safety funding levels for all roads, bridges, and ferries should be returned to 1999 baseline levels.

2. The Governor, the State Legislature, and the Washington State Department of Transportation (WSDOT) immediately should return passenger rail, transit, and ferry operation and maintenance service levels to the 1999 baseline.

3. The Governor, the State Legislature, and local governments should ensure a phasing in of maintenance service levels of C+ or better on all highways and roadways.

4. The Governor and the State Legislature should phase out studded tire use, or institute a surcharge to recognize the cost of studded tire damage.

5. To increase traffic flow, the Governor and the State Legislature should ensure that WSDOT, counties and cities collaborate to institute Traffic System Management techniques such as synchronization of traffic signals throughout the transportation system.

6. To take advantage of cost-effective investments, the Governor, the State Legislature, cities, counties, and the private sector should prioritize funding and incentives to invest in Transportation Demand Management techniques, such as ride sharing tax credits, parking strategies, expansion of park and ride lots, incentives for flexible work hours, four-day work weeks and telecommuting.

7. The Governor, the State Legislature and local governments should ensure the implementation of mechanisms for greater transit and pedestrian-oriented developments ("Smart Growth").

8. The Governor and the State Legislature should pass legislation authorizing transportation 'regions' throughout the state with planning, funding, coordination, and implementation authority to be implemented at the regions' discretion. The Investment Strategies Committee believes regional empowerment will hasten transportation coordination and solutions, especially in the most urbanized areas.

9. The Governor and the State Legislature should pass legislation authorizing congestion pricing for regions to debate and implement at the regions' discretion.

10. To improve the process, the Governor and the State Legislature should support and fund the continued pursuit of state-of-the-art tools to assist in investment decision-making. Specifically, travel demand modeling and benefit-cost methodologies are important tools that require proper financial and staff support to be used more effectively.

11. The Governor, the State Legislature, WSDOT, and the regions should design a six-year plan to aggressively invest in the most congested corridors in the state, to alleviate traffic congestion, move freight, and foster economic development. Congestion cannot be treated effectively by isolated spot improvements. While new roads will have to be built, the

most effective mix of strategies considering all transportation modes in a corridor will yield the best results.

The Investment Strategies Committee believes that transportation planners and decision-makers throughout the state are keenly aware of the high-priority transportation investments needed in their regions. The Committee interpreted its charge as producing a policy-level strategy, as discussed in detail in the section below entitled, "Framework." This interpretation does not include a 'project list' of transportation investments. The Committee did not interpret its charge as calling for a project list, and the Committee is not technically capable of producing such a list.

# Table of Contents

SECTION 1

# Introduction

## BACKGROUND

This report, the *Investment Strategy* of the Blue Ribbon Commission on Transportation (BRCT, or, the Commission), presents the findings of the Commission's Investment Strategies Committee (the Committee). The BRCT charged its Investment Strategies Committee with the following tasks:

- Understand existing and emerging statewide transportation needs
- Recommend critical state, regional, and local transportation investment to be achieved within the next 20 years
- Review, evaluate, and recommend state, regional and local planning programming practices applicable to transportation investments
- Identify, evaluate, and recommend strategies that encourage more effective use of transportation facilities as well as strategies that add new capacity
- Propose a method for recognizing and mitigating inter-jurisdictional impacts of transportation improvements

This report contains the Investment Strategies Committee's final recommendations based on the above charter. The Committee recommends investing in the transportation improvements that best meet the Commission's Benchmarks. The Benchmarks set the standards for improvements in transportation over the next twenty years.

> **Invest—to achieve transportation system benchmarks—in the most effective mix of strategies in the most heavily traveled corridors, using a corridor approach to transportation planning and funding**.
> (Option 1 of the *Draft Accords and Options* of the Blue Ribbon Commission on Transportation).

The recommendations in this report build on information and analyses contained in previous reports, particularly the Committee's Interim Report (May 2000), the Interim Report of the Benchmark Committee (May 2000), and various issue papers. This report incorporates suggestions taken from public comment—at public forums throughout the state, through letters and e-mails sent to the Commission and staff, and through telephone messages and conversations.[2]

[2] Public input ranged in detail and scope. Not all suggestions were feasible for taking action, nor were all suggestions applicable to the BRCT charge.

## METHODS

Moving from theory to policy decisions requires some analysis. The policies presented in this report are based on a combination of work done by many of the transportation agencies in the state, as well as original analysis completed by BRCT staff. In some cases, staff in public agencies supplied information based on requests by BRCT staff. In other cases, public agency staff moved some of their planned work forward to accommodate the BRCT schedule.

The level of data available to move from theory, to measurement, to policy decisions varies by jurisdiction. Federal grant structures and the complexity of decision-making lead to more information available in bigger jurisdictions. Therefore, most of the data readily available for BRCT analysis come from the Puget Sound region (the Washington State Department of Transportation Office of Urban Mobility and the Puget Sound Regional Council). The difference in both quantity and quality of data among jurisdictions, suggests different evaluation methods. In general, the analysis is thus divided into the central Puget Sound region and the rest of the state.

Draft materials from WSDOT and PSRC have been used, and updated with the most up-to-date analysis available from each agency. Both agencies are now updating their transportation plans and have provided the BRCT staff with draft analysis and finalized information as it has become available. Original project analysis of benefits and costs are beyond the scope of this report and thus are deferred to transportation agencies for more rigorous analysis of transportation projects. Cost estimates and benefits estimates have been gathered from on-going work by WSDOT, PSRC, the Regional Transportation Planning Organizations (RTPO's) throughout the state, and other agencies involved in transportation investment analysis, as necessary.

## ORGANIZATION OF THIS REPORT

This report discusses policy objectives the State should undertake, either independently or in conjunction with the local transportation agencies, to begin to meet the BRCT Benchmarks. The report is organized as follows:

- **Section 2, Framework**, provides a context for the approach adopted by the Investment Strategies Committee to drafting policies for transportation investments.

- **Section 3, Investment Policies**, presents the policies and the analysis that support the policies. It discusses thirteen policies in four categories (preserve the transportation system, optimize the transportation system, expand the transportation system, and improve process by which transportation investments are made).

- **Section 4, Action Strategy,** presents recommendations for immediate actions that will help ease the transportation crisis now.

- **Section 5, Appendices,** include more detailed analysis completed in support of the policies endorsed in this strategy. Appendix A presents analysis of state traffic chokepoints recommended for ranking transportation investments, based on data from the Washington State Department of Transportation (WSDOT). Appendix B presents a projection of the costs of investments, based on the transportation needs identified by transportation system plans throughout the state.[3] Appendix C includes a compendium of regional high priority transportation investments identified by the RTPOs throughout the rest of the state, and by the modal offices (aviation, ferries, freight rail, non-motorized, passenger rail, and transit) in WSDOT. Appendix D presents a glossary of some of the terms used in this report.

[3] State and local authorities, not BRCT commissioners or staff identified the specific needs.

# Framework

## OVERVIEW OF INVESTMENT STRATEGIES

Investment means postponing the consumption of some resource now so that greater benefits can be enjoyed in the future. A business makes an investment when it takes some of its current earnings to purchase new equipment or fund research in the hopes that future costs will be lower or sales greater than they would otherwise be. An individual makes an investment when she buys shares in a mutual fund in the hopes that the fund will appreciate and yield an acceptable return on the cash invested when it is eventually sold some time in the future. Or, someone may decide to pay for special courses (instead of, for example, using on the money on a vacation) on the basis of an assessment that increases in future wages will more than offset that initial cost.

Investment clearly implies *a return on what is invested* (usually money, but it could be anything of value: time, natural resources, etc.). In the private sector that return is often narrowly defined as *profits*, though it can be broader. More generally, investing is about what one gets for what one gives up. One postpones current consumption to *invest* what could otherwise have been consumed on the belief that future benefits exceed the value of that current consumption.

Thus, investment inevitably is about *benefits and costs*. Smart investing requires a good evaluation of those benefits (returns) and costs (initial and on-going expenditures), and of the uncertainty and risk associated with each. Thinking in terms of benefits and costs comes naturally to anyone making a decision: if I do this, am I better off—do the benefits outweigh the costs?

These basic ideas apply, with some complications, to investments in the *public sector* in general, and in transportation in particular. Elected officials, with the assistance of agency staff, make decisions on behalf of the people that elected them about how to invest (spend) public money (raised by taxes and fees). They make those decisions in a budget process that typically includes technical evaluation (what are the investment options, what do they cost, what problems do they solve, what other benefits to they produce?) and political considerations (legal precedent, citizen sentiment, inter-jurisdictional equity).

In addition to the obvious complications introduced by making decisions in a public forum, there are others. First, while a business can focus on monetary return on investment as a decision criterion, the public sector almost always has multiple objectives for its investments. For example, if a city wants to build a new stadium it may be less concerned with direct revenues than with jobs, economic development, and image. Second, the public sector has a greater obligation to consider effects that the private sector may be able to ignore: for example, some environmental issues, or the distribution of impacts on various groups. Third, the public sector may perceive an obligation to take a longer-run perspective about impacts, with the result that they become increasingly uncertain.

All of these problems apply to transportation investments, plus some others. First, transportation is not a uniform product. There are many different ways of getting from here to there, and not all of them are equally desirable. Transportation investment cannot be simplified as an exercise in minimizing cost because the benefits of different alternatives may be substantially different. Second, there is a high degree of agreement among transportation professionals that peak-period travel in congested urban areas is substantially under-priced. The implication is that the congestion problems we observe might be substantially reduced if travelers paid prices that more closely reflect the cost imposed on others by their travel in certain locations at certain times. Building more capacity in congested corridors where the prices are wrong may be a bad investment.

These problems notwithstanding, most of the professional advice about transportation investments that has been generated in the last 10 years concurs on the underlying theory: jurisdictions should invest in transportation where the full benefits of the investment (considering all types of impacts, on all people, over the long run) exceed the full costs. Implicit is the idea of getting the prices right. The *main benefits of a transportation investment* are reductions in travel time and accidents from what would have occurred without the improvement. (For a pure preservation project, the benefit is really cost reduction or avoided cost: *not* investing in preservation will cost even more in repair or dysfunction in the future.) The *main costs of a transportation improvement* are the direct costs of building or implementing a project, as well as costs to society (often referred to as *external* costs, to denote that they are not part of the direct, internal costs of planning, design, construction, operation, and maintenance of a transportation facility) such as impacts to air quality, energy consumption, and traffic congestion.

Formal benefit-cost analysis has been criticized for as long as it has been attempted. Many of the critiques of specific applications are valid: benefit-cost methods have often been poorly applied, and sometimes intentionally. But at its foundation, the basic idea of benefit-cost analysis is hard to dispute: that decisions are better informed to the extent that all their significant impacts (benefits and costs) are identified, described, and, where possible, quantified.

**What are the implications of these points for the investment strategy contained in this report?**

- It is impossible—given current data, technical capacities, and schedule—to fully evaluate the benefits and costs of all potential major transportation improvements for all regions in the State.

- Without a relatively detailed analysis of benefits and costs, the Blue Ribbon Commission on Transportation lacks an unequivocal technical foundation on which to base recommendations about investment priorities for individual projects.

- Even if such a technical foundation did exist, it would not address issues about the fairness of the interregional allocation of investment funds (for example, should the highest priority project in one region be funded, even

though it may have fewer net benefits than a mid-priority project in a different, more congested, region?).

- Some evaluations of benefits and costs have been conducted for transportation projects in Washington, but different agencies use different methods. For example, PSRC does not use benefit-cost analysis for its allocation of federal funds, but instead uses a project ranking system based on various criteria. WSDOT prioritizes some roadway projects as a result of a screening process using benefit-cost analysis, but WSDOT funds others projects without using benefit-cost. WSDOT endorses projects without using benefit-cost because (1) those projects are a missing piece of a larger project (and, thus, may have been screened as part of that larger project), (2) of equity considerations, or (3) of other considerations that are not part of WSDOT's benefit-cost model, such as air quality.

- Given these limitations, and the multiple objectives of many transportation investments, this investment strategy cannot hope to demonstrate quantitatively that it somehow maximizes net benefits to citizens of Washington. At best, it can attempt to optimize (trying to get to a portfolio of projects that it considers cost-effective and fair) in an environment of political constraints.

- This investment strategy cannot deal, project by project, with specific proposed transportation investments around the state. It needs to give general guidelines on the types of projects that are likely to be most desirable, and some guidance to allow regions and WSDOT to make efficient and fair selections of projects.

These considerations were the topic of several discussions among the Blue Ribbon Committee members, both collectively and as members of sub-committees. There was little disagreement about the theoretical correctness of making investment decisions based on an evaluation of full benefits and costs. The key debate was about whether the Committee had enough information about benefits and costs *at the project level* to develop an investment strategy that ranked projects. The alternative would be a strategy that gave *policy direction*, leaving the choice of specific projects to local governments and regional and state agencies. The clear desire was to get specific: to go to the level of projects. Ultimately, however, the lack of consistent data about the benefits and costs of all possible projects persuaded members of the Blue Ribbon Commission to endorse the approach taken in the rest of this report, namely:

- Write a policy-level investment strategy
- Do not prioritize or do formal benefit-cost analysis on specific projects.

## GUIDING PRINCIPLES

The BRCT Investment Strategies Committee organized its recommendations into four categories of policies:

1. Preserve the transportation system
2. Optimize the transportation system
3. Expand the transportation system
4. Improve the decision-making process for transportation investments.

The first three categories are meant to imply a rough hierarchy, though a specific expansion project (category 3) could easily prove to be a better investment (e.g., more cost-effective) than a specific preservation project (category 1). Nonetheless, the hierarchy of categories reinforces some basic assumptions of the Committee and the Commission:

- Even without any growth in population, employment, automobiles, or trips, congestion will get worse if we do not preserve the capacity that we have. The evidence is that (a) for many facilities, maintenance has been deferred, and (b) the life-cycle cost of those facilities will be greater because of that. Thus, no matter what we decide about new capacity, cost-effective investments to preserve the existing capacity—which will account for the great majority of any future transportation system—is a priority.
- Most of the major highway system has been built. New highway capacity for new growth areas does not improve traffic problems in existing areas (in fact, it probably contributes to those problems as more people crowd the existing capacity of central areas). Moreover, adding capacity to existing highways and arterials is increasingly difficult and expensive because of surrounding development. In short, the marginal cost of adding capacity is rising sharply.
- If we cannot build enough new capacity to keep up with demand, we have two choices for improving transportation: reduce demand, or make existing capacity work more efficiently. If demand is to be managed, as opposed to arbitrarily restricted, we need to look at demand management and system management policies simultaneously to find ways to get more out of the existing system: we need to make investments in projects and programs to optimize the existing system.

The fourth category (improve the decision-making process for transportation investments) covers all of the first three. Because the first three categories are not strictly hierarchical, investments cannot be either. The recommendation is not to invest everything in preservation until every preservation project on any list has been completed. Rather, it is to clearly describe the benefits and costs of transportation projects (whether preservation, optimization, or expansion) in congested areas and then to invest in those that provide benefits greater than costs. The recommendations in the fourth category address the efficiency of the process for making transportation investment decisions.

As the research in this project illustrates, full analysis of benefits and costs for all projects is beyond the grasp of most state departments of transportation and metropolitan planning organizations, not to mention local governments. Thus, the Committee suggests the following guidelines for regions to help identify cost-effective transportation investments:

- Look to congestion. Congestion and accidents (most of which are correlated with congestion) are key indicators of transportation dysfunction.
- Look to corridors. Corridors are where the congestion is likely to be, and congestion cannot be effectively treated by isolated spot improvements.

Together, these points lead to the Committee conclusion that, as a general rule, investments in congested corridors are likely to be the most cost-effective ones.

Tempering all these recommendations is the Committee recognition that every region has transportation problems that its citizens believe are critical; that notions of regional equity and tax fairness do (and should) enter into investment decisions; and that the Committee cannot hope to rank, based on an evaluation of multiple criteria, all transportation projects in the state that might be built over the next 20 years.

# Investment Policies

## BENCHMARKS

The Investment Strategies Committee investment plan is to invest in transportation improvements so that the Commission's transportation Benchmarks can be achieved. The Benchmarks set the standards for improvements in the transportation system over the next twenty years (Table III-1). The current conditions of the system components referenced by the benchmarks are presented on the following page.

**Table III-1 Benchmarks recommended by the Commission**

| Investment Component | Benchmarks (Numbers Correspond to Benchmark Committee Interim Report) |
|---|---|
| **Preserve the system** | 1. Zero percent of interstate highways in poor condition by 2020. |
| | 2. Zero percent of major state routes in poor condition by 2020. |
| | 3. Zero percent of local arterials in poor condition by 2020. |
| | 4. Zero percent of bridges structurally deficient by 2020. |
| | 5. Complete seismic safety retrofits of all Level 1 and Level 2 bridges by 2020. |
| **Optimize the system**<br><br>**Expand the system** | 6. Traffic congestion on urban interstate highways no worse than national mean by 2020. |
| | 7. Delay per driver no worse than national mean by 2020. |
| | 8. Maintain Vehicle Miles Traveled (VMT) per capita at 2000 levels. |
| | 9. Increase non-auto share of work trips in urban centers by X% *or* Reverse the downward trend of non-auto share of work trips in urban centers by 2020. |
| **Improve the decision-making process** | 10. Administrative costs as percent of transportation spending at state, county and city levels in most efficient quartile nationally. |
| | 11. Washington's public transit agencies will achieve the median cost per vehicle hour of comparable size transit agencies nationwide by 2005. |

It is instructive to measure current transportation conditions in the state against the twenty-year Benchmarks, as researched by the BRCT Benchmark

Committee:[4] Current conditions compared to the Benchmarks measure the transportation task ahead.

- Benchmark 1: Zero percent of interstate highways in poor condition by 2020.

  The Benchmark Committee found that slightly under five percent of the interstate highway was in poor condition in 1997.

- Benchmark 2: Zero percent of major state routes in poor condition by 2020.

  The Benchmark Committee found that less than one percent of major state routes were in poor condition in 1997.

- Benchmark 3: Zero percent of local arterials in poor condition in 2020.

  Data was unavailable for current conditions of local arterials in Washington. A pilot project under the auspices of the Legislative Evaluation and Accountability Program (LEAP), is compiling the available data.

- Benchmark 4: Zero percent of bridges structurally deficient in 2020.

  The Benchmark Committee found that slightly fewer than twenty-five percent of bridges in Washington were in deficient condition in 1997.

- Benchmark 5: Complete seismic safety retrofits of all Level 1 and Level 2 bridges by 2020.

  The Benchmark committee found that the state has been pursuing a program to retrofit bridges and structures identified by risk level. Levels 1 and 2 are the two highest risk levels. Over 300 bridges have been retrofitted to date at a cost of about $40 million. However, almost 1,000 bridges remain to be repaired in the two highest risk levels at a cost of $560 million - $350 million of which is contained in a single structure, the Alaskan Way Viaduct in Seattle.

  Indicator 1: System Safety, Fatal Accident Indicator. (*Prior to final adoption, some changes likely to this indicator).*

  The Committee found that Washington has slightly less than 1.5 fatalities per 100 million vehicle miles, which is less than the national average of about 1.7.[5]

- Benchmark 6: Traffic congestion on urban interstate highways no worse than [the] national mean by 2020.

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[4] See Blue Ribbon Commission on Transportation, Draft Benchmark Committee Interim Report, May 8, 2000.

[5] The Benchmark Committee established 'indicators' for data the committee determined was not directly influenced by investment choices.

The Benchmark Committee found that between sixty and eighty percent of urban interstate highways are congested in Washington. The national mean is about forty-five percent urban interstate congested.

- Benchmark 7: Delay per driver no worse than [the] national mean by 2020.

  This Benchmark calculates delay per driver by metropolitan region. Delay per driver is a calculated average based on the number of licensed drivers in a region. It does not attempt to distinguish between individuals actually experiencing delay and those traveling on non-congested roads or not traveling at all. The Benchmark Committee found the national mean to be about forty hours of average delay per driver annually. Data show that the Seattle-Everett metropolitan area experienced seventy hours of average delay per driver annually; Vancouver-Portland experienced over fifty hours of average delay per driver annually; Tacoma, and especially Spokane were below the national average.

- Benchmark 8: Maintain Vehicle Miles Traveled (VMT) per capita at 2000 levels.

  The Benchmark Committee found that VMT in Washington were about 9,000 miles per person per year in 1998.While Washington's population has grown about forty percent over the past twenty years, VMT have grown sixty percent, or about half again as fast. VMT have been growing faster than population since the mid-1980s. However, VMT per capita have leveled off at about 1990 levels.

- Benchmark 9: Increase non-auto share of work trips in urban centers by X% or reverse the downward trend of non-auto share of work trips in urban centers by 2020.

  The Benchmark Committee found that the only reliable data for this Benchmark was the U.S. Census Bureau's Journey-to-Work surveys, the most recent of which showed a declining share of non-auto trips in the 1980-90 timeframe.

  For Indicators 2 and 3, Air Quality, the Benchmark Committee found a declining incidence of carbon monoxide and ozone (the components of smog) in the state since the 1970's. The Committee chose not to suggest benchmark targets since federal law already requires that, and mechanisms are in place to monitor and sanction regions that do not comply.

  For Indicator 4, Freight Movement and Growth in Trade-Related Freight Movement, the Benchmark Committee chose growth in trade-related freight movements by truck (up over seventeen percent annually in the 1991-98 timeframe) and by railcars (up about nine percent annually in the 1991-98 timeframe) as indicators to the public of the growth of freight movement on the state's transportation system.

- Benchmark 10: Administrative costs as [a] percent of transportation spending at state, county and city levels in [the] most efficient quartile nationally.

The Benchmark Committee found that the state transportation agencies administrative costs fell between the third and fourth quartile nationally, (the first quartile being the lowest), or roughly ten to twelve percent of spending. The committee added that these costs were not all due to inefficiency, but also to Washington's environmental ethic, culture of planning, neighborhood activism, and citizen involvement. The Benchmark applies to all transportation agencies in the state.

- Benchmark 11: Washington's public transit agencies will achieve the median cost per vehicle revenue hour of comparable size transit agencies nationwide by 2005.

  The Benchmark Committee found that King County Metro and Pierce Transit's cost per vehicle hour were thirteen percent and fourteen percent respectively, above their peer group transit agencies nationwide. The Committee also found that transit-operating costs are highly dependent on wages of transit personnel, which in turn are related to the economy and cost of living in the region.

The investment policies, stated below, are designed to address the deficiencies outlined in the Benchmarks. The investment policies are derived from the options developed in the Investment Committee Interim Report, and the May 18, 2000 BRCT Draft Accords and Options for public comment document. References to Options in this report, in brackets, refer to the May 18, 2000 document.

# POLICIES

## INVESTMENT COMPONENT 1: PRESERVE THE TRANSPORTATION SYSTEM

### PRESERVATION SUMMARY

Benchmarks one through five in Table III-1 are the standards applicable to investing to preserve the transportation system. To reach the Benchmarks by better preserving the transportation system throughout the state, the Investment Strategies Committee recommends the following policy directives:

1. Prioritize and fund all maintenance, preservation, and safety needs of the existing transportation infrastructure in the state, including operating and maintenance costs of passenger rail, transit, and ferries. All agencies and jurisdictions should be required to demonstrate the use of maintenance management systems and, for roadways, pavement management systems, as a condition of receiving their baseline allocation of state funding;

2. Use the most cost-effective pavement surfaces available based on durability;

3. Phase out studded tires or establish a surcharge to recognize the cost of studded tire damage to the roadways;

4. Develop a utility cut ordinance for use throughout the state, or require jurisdictions to adopt a utility accommodation ordinance that must include a section on utility cuts.

The roads, streets, bridges, and highways in Washington represent public assets worth over $100 billion. These investments require regular maintenance and preservation, or rehabilitation, to provide cost-effective transportation services. While the state's highways are generally in good condition, many urban arterials, county roads, and streets are not. As a conservative estimate, the total annual cost to drivers in the state of Washington for poorly maintained roads is $156 million, and the average cost per vehicle is $542 over the life of the car.[6] Given the magnitude of public investment and the importance of this issue to the public, the Investment Strategies Committee's discussion of policies to reduce wear-and-tear on the roads and provide cost-effective maintenance and preservation is essential.

Because the total revenues received from value of the gas tax has declined in real dollars over the past decade, money available to fund maintenance projects is dwindling. As a result, counties and cities have had to rely more heavily on property taxes to build or maintain roads. Non-discretionary funds are also an unstable source of income since they are tied to specific projects. Fully funding maintenance and preservation needs throughout the state would significantly improve the condition of roads and allow agencies to maximize their investments in road capacity.

### Policy 1. Prioritize and fund all maintenance, preservation and safety needs of the existing transportation infrastructure in the state, including operating and maintenance costs of passenger rail, transit, and ferries. All agencies and jurisdictions should be required to demonstrate the use of maintenance management systems and, for roadways, pavement management systems, as a condition of receiving their state baseline allocation of funding. [Options 2, 28]

To ensure that the state transportation system is used most efficiently and is safe, the state, together with all transportation funding agencies should continue, or change policy directives to establish a baseline allocation of adequate funding for operation, maintenance, preservation and safety functions for state highways, county roads, city streets, passenger rail, transit, and ferries.

For maintenance, a uniform service level of C+ or better should be established throughout all city, county and state roads. The 20-year needs outlined in the *State Highway System Plan* are intended to achieve a "C+" maintenance service level,

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[6] Data from the American Automobile Association's 1998 edition of *Your Driving Costs* and the Federal Highway Administration's report *Vehicle Operating Costs, Fuel Consumption, and Pavement Type and Condition Factors*, as cited in Surface Transportation Policy Project, *Potholes & Politics 1998*, November 1998. The report uses a base cost-per-mile of 10.7 cents and an inflation factor of 0.24 for poorly maintained roads.

as defined in WSDOT's Maintenance Accountability Process (MAP). For state highways alone, $2.78 billion ($1997) would be projected to maintain a service level of C+; $3.24 would be necessary for service level B and better.[7]

For preservation and to reach the preservation Benchmarks one through four – zero percent of interstate highways, major state routes, and local arterials in poor condition and zero percent bridges structurally deficient by 2020 – the state and counties should continue to use pavement management systems and the lowest life cycle cost methodology.[8] For city streets, however, an inventory and pavement management systems with lowest life cycle cost principles must be put in place to continue to receive state funding and to reach the stated Benchmarks. Maintenance management systems, (an example is WSDOT's Maintenance Accountability Program), should be in place in all jurisdictions.

To reach maintenance and preservation standards and Benchmarks and to better understand data, a uniform transportation data collection system should be instituted.

The Committee notes that while there are accepted definitions of 'maintenance' and 'preservation' for roads, maintenance and preservation have different meanings in the other modes. Therefore, we recommend that the state and the modal entities work toward common definitions of maintenance and preservation.

## Policy 2. Use the most cost-effective pavement surfaces available based on durability. [Option 24]

Another key to well-maintained roads is to invest in the most durable pavement surfaces thereby reducing pavement damage, extending pavement life, and driving down maintenance costs.

Pavement surface selection should be based on a number of factors—the number of heavy vehicle loads, current and projected traffic volumes, climate

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[7] According to WSDOT, Service Level C is defined as "a medium maintenance service level in which the roadway and associated features are in fair condition. Systems may occasionally be inoperable and not available to users. Short-term delays may be experienced when repairs are being made, but would not be excessive. At this maintenance service level, very few deficiencies are present in safety related activities, but moderate deficiencies exist for investment protection activities and significant aesthetic related deficiencies. Preventative maintenance is deferred for most activities except safety-critical work. More emphasis is placed on routine maintenance activities, and corrective maintenance occurs as necessary. A backlog of deficiencies begins to build up that will have to be dealt with eventually, at a higher cost. Some roadway structural problems begin to appear due to the long-term deterioration of the system. There is a noticeable decrease in appearance." - *Maintenance Accountability Process Manual* (Olympia, Wash.: WSDOT, July 1999).

[8] Lowest life cycle cost methodology matches the annual cost of maintenance with the preservation cycle to locate the year with the lowest cost to preserve or rehabilitate a roadway.

conditions, and existing soil types.[9] Within this framework, the most cost-effective and durable pavement surfaces should be chosen.[10]

The Investment Strategies Committee recognizes that pavement surface decisions are often based on available funding. The Committee also realizes that many rural county gravel roads need not be paved. The Committee recommends, therefore, that as part of its baseline allocation of funding for maintenance and preservation, the legislature take into account the cost of upgrading pavement surfaces where it is based on the listed factors above (the number of heavy vehicle loads, etc.) and based on lowest life cycle costs approaches, to a more durable level on at least the most heavily traveled transportation corridors.

### Policy 3. Phase out studded tires or establish a surcharge to recognize the cost of studded tire damage to the roadway. [Option 25]

Compared to other issues in transportation, the literature on studded tire use is slim. Much of the research comes from Finland and Sweden where studded tire use is heavy in the winter months. U.S. studies concentrate on states like Alaska, where lightweight studs have been advocated, and Minnesota and Michigan where they have been banned since the early 1970's. The studies all agree on one finding, however: pavement wear and rutting due to studded tire use is substantial and costly.[11]

To reduce the substantial pavement damage caused by studded tire use and thereby reduce pavement maintenance and preservation costs, the state legislature should change policy directives and either:

- Phase out studded tire use by residents over five years, or
- Establish a surcharge for studded tire use to recognize the cost of studded tire damage to the roadways.

The state legislature has had a long and difficult debate over the use of studded tires in our state. In 1999, Washington banned the use of older type

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[9] Washington State Department of Transportation, Pavement surface selection manual

[10] Portland Cement concrete (PCC) is usually considered the most durable pavement type, but also the most expensive – a rough estimate is $1 million per mile – and therefore not appropriate or possible for all types of roadway. Asphalt concrete pavement (ACP) is considered the next most durable pavement type, and during the period of this commissions' work, a new method of extending the life and durability of asphalt concrete called "Superpave" has been introduced. (Another newer pavement type called Stone Mastic Asphalt or SMA, supposedly more rut resistant, has also been tested in Washington in the past few years). A less durable and less expensive pavement type, which is widely used, is called bituminous coal treatment (BCT).

[11] See for example, "More Durable Than One Would Expect," Finnish Tekniikan Maailma Magazine, August 31, 1994; Professors Lundy and Hicks, "Wheel Track Rutting Due to Studded Tire Use," paper presented to the Annual Meeting of the Transportation Research Board, Washington DC, July 1991.

studded tires in favor of lightweight studs that are estimated to reduce wear by between fifteen and fifty percent.[12]

Twenty-four states allow studded tire use for at least part of the year while other states, most notable snowy climate states Minnesota and Michigan, have banned studded tires since 1972 and 1974 respectively. Both states banned studded tires due to pavement wear. Studies indicate that the accident rate in Michigan and Minnesota compared favorably after the ban went into effect. Neither state has reintroduced studded tires.[13]

### Policy 4. Develop a utility cut ordinance for use througout the state, or require jurisdictions to adopt a utility accommodation ordinance that must include a section on utility cuts. [Option 26]

Cutting pavement is frequently required to repair water, gas, power, and telephone lines as well as for new service installation. While necessary to maintaining utility service, open cuts in pavement compromise the structural integrity of roads. WSDOT has reviewed studies that indicate that regardless of how well a utility cut is restored, the pavement area on each side of the trench is permanently damaged.[14] Furthermore, utility cuts are a major cause of congestion, funneling traffic into a few lanes (or one lane) and rendering other traffic system management techniques, such as signal synchronization, less effective.

Each jurisdiction has its own set of standards for handling open cuts in pavement by utility companies. Better and more consistent management of utility cuts could lower maintenance and preservation costs, improve road conditions, and minimize the disruption to traffic.

To reduce pavement damage and to coordinate utility cuts on roadways, the state legislature should:

- Adopt a flexible model utility cut ordinance so that it can be used throughout the state, or
- Require that every jurisdiction adopt a 'utility accommodation' ordinance that shall include a section on utility cuts.

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[12] The literature is inconsistent on the reduced pavement wear caused by the use of lightweight studs. Alaska has estimated that the reduced pavement wear approaches fifty percent. (See Memorandum to Rep. Ron Larson, Chairman, Alaska House Finance Committee, April 6, 1994.) WSDOT has estimated the reduced damage to be more on the order of fifteen percent. (Telephone conversation with Charlie Howard, WSDOT Planning Director, spring 2000).

[13] See "After Studs in Minnesota," Minnesota Department of Highways, 1975.

[14] Letter from Larry Messmer, Utilities Engineer, Washington State Department of Transportation, May 26, 1999.

Major elements of the model ordinance or the required 'utility accommodation' ordinance (based on best management practices) should include:

- A joint trenching policy (i.e., it is the intent of the jurisdiction that all companies wishing to lay cable or otherwise require access to ground under the roadway, do so at one time to minimize the disruption to traffic and damage to the roadway)[15]

- Construction standards, pavement restoration requirements, and expediting of permit processing for joint trenching

- Charges to utility providers responsible for trenching work not completed within a contractual period and to compensate for the loss of the useful pavement life caused by trenching.

## INVESTMENT COMPONENT 2: OPTIMIZE THE TRANSPORTATION SYSTEM

### OPTIMIZATION SUMMARY

Benchmarks six through nine in Table III-1 are the standards applicable to investing to optimize the transportation system. To reach the Benchmarks by optimizing the transportation system—making it run better—the Investment Strategies Committee recommends the following policy directives:

- Traffic System Management (TSM) and Intelligent Transportation Systems (ITS) policies should be implemented where cost-effective.

- Traffic Demand Management (TDM) policies should be used to reduce demand on the highway system.

- Jurisdictions should integrate transportation and land use planning.

- Congestion pricing should be made a policy option for congested urban areas.

The State of Washington has a large, complex, and functioning transportation system. As noted previously, there are over $100 billion in public assets invested in the existing transportation system. Some indications of the size and complexity of Washington's transportation system are as follows:

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[15] While the Committee would like to recommend a 'no-cut' policy on the roadways for a period of years following a joint trenching to minimize traffic disruptions, it seems clear that at least the federal Telecommunications Act of 1996 has been interpreted as finding such 'no-cut' policies as barriers to competition or a prohibition of entry into the market. Nevertheless, the state or local jurisdictions should be within the current law by applying strict conditions to any future roadway cuts such as: requiring partial pavement restorations, and time limits both in length and hours of the day or night.

- Statewide, there are over 80,000 centerline miles on our state highways, county roads, and city streets, with over 5.5 million registered vehicles that traveled over 52 billion miles in 1999.

- The state rail system carried over 74 million tons of cargo in 1997 and the Amtrak system carried over 550,000 people in the Pacific Northwest Rail Corridor (Eugene, Oregon to Vancouver, B.C.) in 1998.

- There are 26 public transit systems in Washington that carried over 156 million passenger trips in 1998. Voters approved a 1996 ten-year $3.9 billion investment in a high capacity transit system in the Puget Sound Region.

- Washington's ferry fleet consists of 29 boats that carried 25 million passengers to 20 different ports of call in 1999.

- The state's aviation system accommodates over ten million passengers a year and handles more than 500,000 metric tons of air cargo per year; The bulk of the aviation traffic goes through Seattle-Tacoma International Airport, operated by the Port of Seattle, but the state and local agencies maintain 129 public use airports.[16]

- A healthy non-motorized system of bike trails, on-street bicycle paths and walking trails also exists.

As large, complex, and sophisticated, as this system has become, there are steps that can be taken—some are already implemented—that will make the system more reliable, reduce vehicle miles traveled (VMT)—or reduce the increase in VMT—lessen congestion on our highways, and ensure the system is well-prepared for the future.

Increasing the productivity of your existing assets is a basic investment strategy. Optimizing the system is often the quickest, most cost-effective, and least environmental damaging strategy for increasing the system's capacity to reliably move people and goods.

### Policy 5. Traffic System Management (TSM) and Intelligent Transportation Systems (ITS) policies should be implemented where effective. [Option 1]

Traffic System Management (TSM) and Intelligent Transportation Systems (ITS) are designed to add capacity without requiring major new infrastructure additions. Implementation of these policies can significantly increase the flow of traffic at a fraction of the cost of new capacity.

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[16] Washington State Department of Transportation, "Key Facts, A Summary of Transportation Information," January 2000

Structural modifications can increase highway traffic flow and move high occupancy vehicles (HOVs) more quickly through traffic. Providing drivers with real-time information allows them to avoid highway incidents and event-related delays. Highway 'incidents'—accidents, stalled vehicles—are a major cause of congested highways. Incident response is most helpful in urban areas where volumes are heavy, and advance notice of incidents can effectively reroute large numbers of vehicles and passengers.

According to WSDOT, a significant cause of the congestion on our highways is vehicle collisions or incidents. Simple, low-cost investments in 'roving tow truck patrols' can significantly reduce congestion-related delays.

The Investment Strategies Committee recognizes that the Washington State Department of Transportation, together with local agencies and private partners, is a national leader in implementing TSM and ITS policies. Therefore, the Committee recommends that the state legislature should provide WSDOT with the necessary resources to advance, among others, the following TSM features:

- Traffic and incident management—freeway on-ramp metering, signal synchronization, intersection modification, priority treatment for HOVs and transit vehicles, and roving service patrols designed to quickly move disabled vehicles from the roadway; and

- Real-time information about highway incidents and transit—information to the public about incidents and transit currently disseminated by private parties (radio, television), by highway message signs, and through the Internet, delivery to on-board systems or personal digital assistants (PDAs).

As technology advances and new applications to transportation emerge, it is imperative that Washington has the resources to work with industry to take advantage of new congestion relief opportunities. A number of ITS systems now coming available can be advanced, including:

- Management systems allowing local jurisdictions to exchange transportation information to improve traffic flow within corridors especially during peak commute times;

- Centralized traffic control systems that synchronize traffic signals throughout a region to increase traffic flow;

- Commercial Vehicle Information Systems Network (CVISN) that checks trucks for weight, identification, safety rating, and fee payments as they drive by at the speed limit, allowing the State to target its enforcement of commercial vehicle regulations without interfering with trucks that are in compliance; CVISN is in its infancy in Washington and should be expanded;

- Accurate and up-to-date weather information, particularly in rural areas, that can warn motorists of icy and dangerous highway conditions and

permit transportation agencies to better deploy maintenance personnel; WSDOT's '*rweather*' website can pinpoint weather to a 2.4 square-mile grid up to 36 hours, and is considered a leader in the industry; continued development of this system will only increase safety and reduce highway accidents.

Successful ITS strategies are based on integration and interoperability among jurisdictions that build, own, and operate inter-related components. Success depends on both technical and institutional integration. Technical integration requires electronic systems established after up-front planning and careful execution for electronic information to be stored and accessed by various parts of the system. To achieve institutional integration, agencies and jurisdictions must agree on the benefits of ITS and the value of being part of an integrated system. Then they must agree on roles, responsibilities, and shared operational strategies. Jurisdictions must agree on standards of data availability and system quality to ensure interoperability.

Traffic System Management concepts, especially Intelligent Transportation Systems, are developing rapidly along with technology advances. Therefore, the State should continue to work with the local agencies and private partners and devote the necessary resources to stay abreast of new technology and implement workable advances. TSM and ITS investments should undergo rigorous benefit-cost analysis before implementation.

### Policy 6. Transportation Demand Management (TDM) policies should be used to reduce demand on the highway system. [Option 1]

Transportation Demand Management (TDM) policies are designed to manage trip making decisions by correcting the understanding of transportation pricing through public policy. Trip-reduction policies are designed to reduce demand on the highway system by removing vehicles, especially during peak driving hours. The 1999 Commute Trip Reduction (CTR) Task Force Report states that the CTR program removes 18,500 vehicles from the state's roadways each morning—12,600 vehicles in the central Puget Sound region alone. Based on that estimate, and if one further assumes that the state would otherwise achieve that level of service by building new lanes to accommodate the cars that are no longer making trips, then the state would need to add the equivalent of 20 to 25 highway lane miles. State CTR program expenditures average approximately $3 million/year, less than 0.3 percent of WSDOT's 1999-2002 budget.

The Washington State Highway System Plan does not expect to be able to accommodate its baseline forecast of demand for 2018. It assumes that the demand can be reduced by 22 percent through trip-reduction policies. That amount of trip reduction will require substantial public investment if it is to be achieved without a substantial reduction in travel benefits to many travelers.

TDM policies require employers and developers to participate willingly and incur implementation costs. Policy makers should provide proper incentives that match the benefits gained from effective execution of TDM policies.

The state legislature and local transportation agencies should devote substantial new resources to implementing TDM policies. Successful TDM programs must provide access to a good alternative to the auto, and increase the *relative* cost of a single-occupant auto trip through increased parking fees or cash payments to users of HOVs or transit.

To that end, the state should expand the Commute Trip Reduction (CTR) program by: 1) reinstating the rideshare tax credit and expand the program to offer rideshare subsidy reimbursement to public entities and non-profit organizations that cannot claim tax credits; 2) expanding the focus beyond employees traveling during the peak morning commute, increasing the program from 1,100 to 4,400 worksites and from 500,000 to 800,000 affected employees; and 3) expanding the program to include college and high school faculty, thereby extending the program to an additional 260 worksites. Implement pilot projects to study the effectiveness of adding college and high school students to the CTR program.

In addition, the state should adopt TDM (trip reduction) policies and programs that include at least the following:

- Implement parking strategies that increase the relative cost of a single-occupant auto trip; (for example, parking cash out: giving cash to employees in lieu of employer-provided parking, if the employee will travel to work other than in a single-occupancy vehicle);

- Fund corridor trip reduction programs, expand park and ride lots (providing adequate lighting to insure safety, and providing connecting transit service) increase access to transit such as providing transit pass subsidies, and invest in cost-effective public awareness and education programs.

- Provide subsidies and incentives to businesses that implement TDM policies and programs. Examples include flexible work hours, four-day work weeks, telecommuting, and time share automobile businesses

## Policy 7. Jurisdictions should integrate transportation and land use planning. [Option 3]

A long term and effective strategy to reduce both traffic and investment costs is to focus new commercial and multi-family growth in existing downtowns and pedestrian and transit-friendly neighborhoods. The State can provide incentives to local jurisdictions to integrate sound transportation and land use planning by tying state funding to the effectiveness of local 'Smart Growth' policies. The term 'Smart Growth' can be defined as compact, mixed-use, pedestrian-friendly developments intended to reduce the need for car travel for everyday activities. Local agencies in turn must translate Smart Growth into development incentives for local builders and developers.

WSDOT, regional and local transportation planners should incorporate Smart Growth alternatives as standard practice when considering significant system

expansion. To that end, the state legislature and local governments should adopt and fund work to assess the effectiveness of concurrency and make specific recommendations to meet GMA requirements. In addition, the state legislature and local governments should support research, data collection, and analysis to quantify costs and benefits of land use and transportation connection projects, including a pilot project to develop a "maximum benefit' approach to Land Use and TDM.

The following Smart Growth recommendations should also be adopted and funded by the state legislature and local governments:

- Provide incentives to public and private organizations to achieve or exceed BRCT benchmarks for SOV and VMT reduction, such as: results-based competitive grants, priority permitting, tax credits, and exemptions or deferrals

- Establish transfer of development rights (TDR) programs within local jurisdictions

- Eliminate regulatory barriers to pedestrian and transit-friendly development while ensuring high environmental and design standards, and provide incentives for relocation and new development to locate in Smart Growth centers

- Require publicly financed buildings to meet Smart Growth requirements and fund investments by the public sector that are coordinated with transportation and Smart Growth performance objectives

- Integrate transportation and land use planning at the regional level; provide regional planning organizations (MPOs and RTPOs) with greater authority to match transportation investments with land use plans; include authority to prioritize funding including Smart Growth criteria

## Policy 8. Congestion Pricing should be made a policy option for congested urban areas. [Option 32]

The state legislature should pass legislation authorizing local or regional transportation agencies to use 'congestion pricing,' and to tax parking and establish regional parking standards at the local agencies or the regions' discretion.

The Committee's issue paper *Traffic Congestion in Washington*, defines congestion as "…an excess travel time or delay due to traffic interference above an agreed to norm." In short, congestion is too many people trying to use the available supply of goods or services. Many goods and services besides transportation are congestible, and various schemes are used to handle that congestion. For example, state parks regulate congestion in camping grounds by using a reservation system. Communications companies and electric utilities charge premium rates during periods of high demand, and lower rates off-peak, in an attempt to adjust use to capacity. In general, the goods and services in our

economy do not get severely congested because use (consumption) is rationed by price.

There is general agreement among transportation economists and planners that drivers perceive the price of an automobile trip to be less than its full costs to society. In particular, drivers do not perceive the full costs of their trips—especially the costs they impose on other drivers in terms of time (extra travel time—delay—because of congestion). Because they do not pay those extra costs as drivers,[17] they perceive the trip as costing less than it really does, and they make more trips than they would otherwise. The result is congestion: too many people want to use the highway capacity in one place at the same time.

That problem is at the heart of highway transportation problems. If one accepts the proposition that many highways, especially in urban areas, are under priced at peak periods, then solving congestion on these highways by building more capacity may miss the point. For example, most businesses that have excess demand for a product because they sell those products below average cost would go bankrupt if they tried to solve the problem by increasing volume and selling yet more products below cost.

For transportation, as with other products, the solution is to charge more for product. "Congesting pricing" tries to get drivers to pay not only for the length of a trip (as a gas tax does), but also for its location and time, which are critical to congestion. A toll is a simple example of paying for a trip by location. Bridge tolls on the Golden Gate Bridge in San Francisco are adjusted by day (weekday, weekend); they could also be adjusted by time of day. In a more sophisticated application, a freeway in San Diego has a lane that drivers can use for a charge that is posted electronically and depends on the amount of congestion in the non-priced lanes.

## INVESTMENT COMPONENT 3: EXPAND THE TRANSPORTATION SYSTEM

### EXPANSION SUMMARY

Benchmarks six through nine in Table III-1are the standards applicable to investing to expand the transportation system. Expanding the system refers to all modes, for the Committee believes that a multimodal solution is essential.

In this report, the Investment Strategies Committee has endorsed a framework for making investment decisions. In the previous discussions of Investment Components, key programs have been endorsed for maximizing efficiency of the system. Executing the process for project prioritization that the Committee recommends is beyond the scope and charge of the Commission. The Investment Strategies Committee does not recommend specific expansion projects for prioritization.

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[17] Ultimately, somebody, one way or another pays the costs. The problem is that the traveler does not perceive those costs when making a trip decision.

### Policy 9. Make cost-effective system expansions in heavily traveled corridors. [Option 1]

This policy builds off the text in Option 1 of the Draft Accords and Options report, recognizing that system expansion is a likely part of the most effective mix of solutions in some areas. The policy deliberately includes the words "heavily traveled" in place of "critical." The heavily traveled corridors are where the state's worst traffic chokepoints exist. Those chokepoints are called out and identified in the attached Appendix A, Critical Needs: "Chokepoints Analysis." The state should consider system expansions; the chokepoints identified in Appendix A deserve priority consideration.

System expansion may or may not be part of the most effective mix of transportation investments. As mentioned in the Guiding Principles section of this report, the Committee suggests the following guidelines to help identify cost-effective transportation investments:

- Look to congestion. Congestion and accidents are key indicators of transportation dysfunction.
- Look to corridors. Corridors are where congestion is likely to be, and congestion cannot be effectively treated by isolated spot improvements.
- Use benefit-cost analysis to the extent possible, to analyze and communicate the value of investment alternatives.

## INVESTMENT COMPONENT 4: IMPROVE THE DECISION-MAKING PROCESS

### IMPROVEMENT SUMMARY

The Committee concludes that all eleven Benchmarks in Table III-1and four Indicators are applicable to investing to improve the decision-making process. The goal in improving the decision-making process is to make better, more cost-effective transportation decisions so that people and goods can be moved more efficiently.

While the "governance" issue is the purview of the Commission's Administration Committee, the Investment Strategies Committee recommends that the state enact legislation permitting "regions" at their discretion, to better plan, fund, coordinate, and implement major transportation investments within their borders.

As the state and local transportation agencies expand the transportation system, the Investment Strategies Committee recommends the following policy directives:

- Use benefit-cost analysis in selecting the most effective transportation investments. Multi-modal benefit-cost analysis should be used to the extent possible as it develops.

- The use of a corridor approach in transportation planning and investing so the most heavily traveled corridors are the highest investment priorities. The most effective mix of strategies in each corridor should be the goal.

- The transportation decision-making process should be concentrated into a regional approach, with revenue authority granted to regions to address their high priority needs.

- The state and local transportation authorities should invest in the human resources necessary to supply the technical workforce capable of maintaining, preserving, and improving the transportation system.

Benefit-cost analysis should be used throughout the transportation system so that the "needs" list of transportation investments can be prioritized. The corridor approach should be implemented so that limited transportation funding can be channeled to the most heavily traveled areas. Investment outcomes should be clear before investments are made.

### Policy 10. Use benefit-cost analysis in selecting the most effective transportation investments. Multi-modal benefit-cost analysis should be used to the extent possible as it develops. [Option 4]

Benefit-cost analysis is a decision-making tool used to aid policy decisions. The theory and techniques of benefit-cost analysis, while not without limitations, provide the most solid foundation for a clear exposition of benefits and costs, and a solid structure to which any number of sub-analyses of impacts can be added. In transportation decision-making, transportation benefits consist of the value of decreased travel time and safety improvements. Costs include direct costs of investments and indirect costs to those affected by a project or policy.

Data on benefits and costs cannot, and should not, be all that drive decisions about transportation programs and projects. The State uses benefit-cost analysis to set priorities for some highway investments, but not for other modes such as transit and trip reduction programs. Different jurisdictions do not share common definitions of needs and service objectives. According to presentations made to the committee, analytic tools for measuring costs and benefits are not used consistently and few 'needs' have been subject to rigorous analysis of their cost-effectiveness.

There is currently no institutionalized analytical approach to benefit-cost analysis across modes and regions. For example, there is no formalized method to aid the state in deciding whether it is more beneficial to invest limited dollars in a rail program in Vancouver or a road project in Pierce County. Therefore, the Committee recommends using benefit-cost analysis in selecting the most effective investments. Furthermore, the Committee recommends that this type of analytical process must be available in the future and that the state adequately fund its development and usage.

## Policy 11. Use a corridor approach in transportation planning and investing so that the most heavily traveled transportation corridors are the highest investment priorities [Option 1]

Transportation revenue is limited, and all the transportation needs in Washington will never be fully met. Therefore, the Committee recommends that the state legislature and local transportation agencies should concentrate their investments in the most-heavily traveled corridors.

A "transportation corridor" can be identified based on state and regionally significant destinations and travel patterns of people. The state has numerous transportation corridors including highway, freight rail, high capacity rail, ferry, and transit. As has been mentioned several times in this report, transportation decision-makers should look to congestion and look to corridors when deciding where to invest.

The agencies should also conduct corridor analyses in the most heavily traveled corridors so that the most effective mix of investments can be achieved. The 'most effective mix principle' idea is that all transportation strategies (e.g., transit, rail, and ferry, increased road capacity, non-motorized improvements, smart growth, traffic demand management, traffic system management and intelligent transportation systems, and congestion pricing) should be considered when investing in such corridors. While presently there is no standardized analytical approach to determining the most effective mix of modes in a corridor, each region of the state would best know its transportation needs and what the populace desires in its transportation choices.

The goal should be to invest in the most effective mix of strategies, bolstered by benefit-cost analysis, so that the investment benefits are quantifiable and achievable, the public knows what they are buying, and the outcomes will increase mobility and choices for the traveling public.

The state and local agencies should direct new investments to the worst chokepoints and congested areas first. Where appropriate, public-private partnerships should be pursued.

## Policy 12. The transportation decision-making process should be concentrated into a regional approach, with revenue authority granted to regions to address their high priority needs. [Options 32, 33]

While the "governance" issue is the jurisdiction of the Administration Committee of this commission, the Investment Strategies Committee would be remiss without mentioning this issue in passing. Governance was a constant topic of the committee's work, and committee members expressed strong sentiments about the issue.

Investment Strategies Committee members determined that due to limited coordination among the planning and funding of transportation investments in adjacent jurisdictions and because of the severe lack of funding available for

major transportation investments, especially in the most urbanized areas, that a more regional approach to planning and funding transportation investments would improve the system. The essence of a regional system is flexibility in use, better planning, funding, coordination, and implementation in project delivery, and regional revenue options to make the strategy viable.

Other areas around the country are beginning to move toward this model, and if crafted with care and foresight, it appears to hold the promise that the most urbanized areas of the state can move ahead in a more coordinated and expeditious manner with transportation investments that would otherwise take decades to achieve, if at all.

Other areas of the state could use a regional model when and if it suits their purposes. A regional model is not intended to reduce the flow of state revenues to areas of the state.

Therefore, the Committee recommends that the transportation decision-making process should be concentrated into a regional approach, with revenue authority granted to regions to address their high priority needs.

### Policy 13. Invest in the human resources necessary to supply the technical workforce capable of maintaining, preserving, and improving the transportation system. [Option 6]

The Committee recommends that the state and local transportation authorities should form partnerships with skilled trades to develop apprenticeships and training programs to insure the availability of a skilled transportation workforce into the future. The Committee found that the state and local transportation agencies are already showing signs of an insufficiently skilled workforce to operate the transportation system at its highest level. Funding and incentives should be provided for programs that foster a strong industry in transportation planning and engineering, such as:

- Establish technical apprenticeship opportunities specific to the needs of transportation
- Establish a "human resource skills bank" of transportation professionals, and develop a program allowing all transportation authorities to draw from the skills bank during periods of need
- Enhance skills of the existing technical transportation workforce.

The legislature should explore the establishment of transportation technical training programs within the community college system, through vocational/technical schools, and in the state four-year higher education institutions.

SECTION 4

# Action Strategy

While the Benchmarks set the standards for investing, the Benchmarks are set well into the future to allow the state and local governments time to adjust policies and begin investing to meet the Benchmark goals. For the immediate future, the Investment Strategies Committee suggests an "Action Strategy" to move the state aggressively into the transportation future. The Action Strategy recommendations are as follows:

1. The Governor and State Legislature should ensure that maintenance, preservation, and safety funding levels for all roads, bridges, and ferries should be returned to 1999 baseline levels.

2. The Governor, the State Legislature, and the Washington State Department of Transportation (WSDOT) immediately should return passenger rail, transit, and ferry operation and maintenance service levels to the 1999 baseline.

3. The Governor, the State Legislature, and local governments should ensure a phasing in of maintenance service levels of C+ or better on all highways and roadways.

4. The Governor and the State Legislature should phase out studded tire use, or institute a surcharge to recognize the cost of studded tire damage.

5. To increase traffic flow, the Governor and the State Legislature should ensure that WSDOT, counties and cities collaborate to institute Traffic System Management techniques such as synchronization of traffic signals throughout the transportation system.

6. To take advantage of cost-effective investments, the Governor, the State Legislature, cities, counties, and the private sector should prioritize funding and incentives to invest in Transportation Demand Management techniques, such as ride sharing tax credits, parking strategies, expansion of park and ride lots, incentives for flexible work hours, four-day work weeks and telecommuting.

7. The Governor, the State Legislature and local governments should ensure the implementation of mechanisms for greater transit and pedestrian-oriented developments ("Smart Growth").

8. The Governor and the State Legislature should pass legislation authorizing transportation 'regions' throughout the state with planning, funding, coordination, and implementation authority to be implemented at the regions' discretion. The Investment Strategies Committee believes regional empowerment will hasten transportation coordination and solutions, especially in the most urbanized areas.

9. The Governor and the State Legislature should pass legislation authorizing congestion pricing for regions to debate and implement at the regions' discretion.

10. To improve the process, the Governor and the State Legislature should support and fund the continued pursuit of state-of-the-art tools to assist in investment decision-making. Specifically, travel demand modeling and benefit-cost methodologies are important tools that require proper financial and staff support to be used more effectively.

11. The Governor, the State Legislature, WSDOT, and the regions should design a six-year plan to aggressively invest in the most congested corridors in the state, to alleviate traffic congestion, move freight, and foster economic development. Congestion cannot be treated effectively by isolated spot improvements. While new roads will have to be built, the most effective mix of strategies considering all transportation modes in a corridor will yield the best results.

The Investment Strategies Committee believes that transportation planners and decision-makers throughout the state are keenly aware of the high-priority transportation investments needed in their regions. The Committee interpreted its charge as producing a policy-level strategy, as discussed in detail in the section below entitled, "Framework." This interpretation does not include a 'project list' of transportation investments. The Committee did not interpret its charge as calling for a project list, and the Committee is not technically capable of producing such a list.

# Appendix A – Critical Needs 'Chokepoints' Analysis

The following tables, Table A-A and Table A-B, present the worst traffic chokepoints in the system of Washington State highways.

Table A-A presents measures of congestion on state routes and interstate highways, sorted by the amount of time lost on a daily basis by all people using the roadways, per mile. This list of chokepoints serves as an identification of critical needs in the state, where investment considerations should focus.

Table A-B summarizes projects identified by the Washington State Freight Mobility Strategic Investment Board (FMSIB) in its 2000 supplemental budget and into the next three biennia. FMSIB project priority criteria weight heavily the degree to which projects reduce freight delays and increase general mobility. These projects identify "chokepoints" and should be included in the focus of investment considerations.

## Table A-A. Washington State Chokepoints Summary

| Region Name | Route Number | Length (sum of segments, miles) | Avg. Daily Vehicle Trips (Max) | Avg. Daily Person Trips (Max) | Lost time per day (hours) | | | | | Average Speed During Peak Hour | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | For all vehicles | For all vehicles, per mile | For all persons | For all persons, per mile | For all persons, per lane-mile | North/West bound | South/East bound |
| Northwest | 405 (I-90 to 520) | 3.73 | 205,817 | 267,562 | 20,641 | 5,534 | 26,833 | 7,194 | 1,708 | 24 | 30 |
| | I-5 (405 north to I-90) | 10.12 | 283,226 | 368,194 | 27,160 | 2,684 | 35,308 | 3,489 | 669 | 32 | 32 |
| | 405 (I-5 to I-90) | 10.14 | 163,697 | 212,806 | 18,985 | 1,872 | 24,681 | 2,434 | 755 | 28 | 32 |
| | I-5 (I-90 to 520) | 3.52 | 292,024 | 379,631 | 4,015 | 1,141 | 5,220 | 1,483 | 273 | 52 | 48 |
| | I-5 (520 north to 405) | 6.84 | 246,720 | 320,736 | 7,636 | 1,116 | 9,926 | 1,451 | 320 | 48 | 42 |
| | 513 | 1.62 | 58,021 | 75,427 | 1,753 | 1,082 | 2,279 | 1,407 | 638 | 25 | 21 |
| | I-5 (SR 18 to 405) | 14.92 | 191,666 | 249,166 | 13,433 | 900 | 17,462 | 1,170 | 242 | 43 | 41 |
| | 518 | 1.36 | 118,600 | 154,180 | 1,114 | 819 | 1,448 | 1,065 | 497 | 25 | 39 |
| | 405 (North of 520) | 12.15 | 175,124 | 227,661 | 8,875 | 730 | 11,538 | 950 | 296 | 41 | 44 |
| | 538 | 0.24 | 26,821 | 29,503 | 175 | 728 | 192 | 801 | 399 | 15 | 20 |
| | 164 | 5.89 | 32,839 | 42,691 | 4,183 | 710 | 5,438 | 923 | 668 | 16 | 21 |
| | 2 | 9.4 | 36,597 | 40,439 | 6,438 | 685 | 7,529 | 801 | 708 | 34 | 33 |
| | 908 | 2.81 | 34,390 | 44,707 | 1,758 | 626 | 2,285 | 813 | 397 | 17 | 26 |
| | I-90 | 11.71 | 154,377 | 200,690 | 7,013 | 599 | 9,117 | 779 | 211 | 46 | 48 |
| | I-5 (North of I-405) | 10.23 | 171,825 | 223,373 | 5,849 | 572 | 7,604 | 743 | 206 | 48 | 51 |
| | 520 | 10.39 | 137,146 | 178,290 | 5,536 | 533 | 7,196 | 693 | 323 | 41 | 43 |
| | 528 | 0.36 | 27,499 | 35,749 | 183 | 509 | 238 | 662 | 319 | 16 | 19 |
| | 522 | 11.89 | 74,000 | 96,200 | 5,812 | 489 | 7,498 | 631 | 328 | 27 | 33 |
| | 509 | 5.07 | 22,634 | 29,424 | 2,429 | 479 | 3,158 | 623 | 600 | 21 | 14 |
| | 515 | 0.79 | 31,544 | 41,007 | 378 | 479 | 492 | 622 | 315 | 21 | 17 |
| | 99 | 17.22 | 77,525 | 100,783 | 7,831 | 455 | 10,181 | 591 | 267 | 31 | 25 |
| | 527 | 6.38 | 39,917 | 51,892 | 2,846 | 446 | 3,700 | 580 | 424 | 23 | 25 |
| | 524 | 4.91 | 42,446 | 55,180 | 2,151 | 438 | 2,796 | 569 | 360 | 18 | 23 |

| Region Name | Route Number | Length (sum of segments, miles) | Avg. Daily Vehicle Trips (Max) | Avg. Daily Person Trips (Max) | Lost time per day (hours) | | | | | Average Speed During Peak Hour | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | For all vehicles | For all vehicles, per mile | For all persons | For all persons, per lane-mile | For all persons, per lane-mile | North/West bound | South/East bound |
| | 18 | 14.66 | 82,462 | 107,201 | 6,326 | 432 | 7,637 | 521 | 376 | 30 | 27 |
| | 204 | 2.38 | 22,884 | 29,749 | 960 | 403 | 1,248 | 524 | 319 | 24 | 31 |
| | 516 | 9.62 | 46,317 | 60,212 | 3,685 | 383 | 4,790 | 498 | 248 | 25 | 20 |
| | 20 | 9.64 | 30,955 | 34,051 | 3,419 | 355 | 3,761 | 390 | 311 | 31 | 31 |
| | 526 | 1.46 | 78,473 | 102,015 | 472 | 323 | 614 | 420 | 254 | 28 | 27 |
| | 542 | 1.17 | 14,370 | 15,807 | 364 | 311 | 401 | 343 | 340 | 16 | 20 |
| | 523 | 1.5 | 31,457 | 40,894 | 445 | 296 | 578 | 385 | 180 | 20 | 28 |
| | 167 | 6.87 | 100,858 | 131,115 | 1,836 | 267 | 2,387 | 347 | 146 | 53 | 46 |
| | 525 | 6.44 | 46,137 | 59,978 | 1,674 | 260 | 2,177 | 338 | 280 | 30 | 37 |
| | 539 | 0.1 | 30,017 | 33,019 | 26 | 260 | 29 | 286 | 113 | 24 | 27 |
| | 181 | 2.17 | 33,541 | 43,603 | 537 | 248 | 699 | 322 | 146 | 25 | 25 |
| | 900 | 3.05 | 30,293 | 39,381 | 737 | 242 | 958 | 314 | 153 | 23 | 33 |
| | 519 | 0.08 | 32,800 | 42,640 | 19 | 242 | 25 | 314 | 117 | 20 | 25 |
| | 169 | 3.97 | 17,959 | 19,755 | 894 | 225 | 984 | 248 | 246 | 25 | 21 |
| | 9 | 8.28 | 22,678 | 29,481 | 1,812 | 219 | 2,087 | 252 | 243 | 26 | 30 |
| | 11 | 1.26 | 15,661 | 17,227 | 274 | 217 | 301 | 239 | 238 | 20 | 25 |
| | 410 | 1.34 | 15,932 | 17,525 | 274 | 204 | 301 | 225 | 223 | 21 | 17 |
| | 104 | 0.98 | 46,254 | 60,130 | 192 | 196 | 249 | 254 | 156 | 27 | 30 |
| | 202 | 5.1 | 35,732 | 46,452 | 762 | 149 | 990 | 194 | 182 | 29 | 25 |
| | 531 | 4.38 | 18,845 | 20,730 | 572 | 131 | 630 | 144 | 142 | 29 | 25 |
| | 530 | 1.09 | 14,074 | 15,481 | 114 | 104 | 125 | 115 | 114 | 18 | 21 |
| | 532 | 1.45 | 15,561 | 17,117 | 145 | 100 | 160 | 110 | 109 | 23 | 26 |
| Northcentral | 285 | 4.04 | 44,734 | 49,207 | 11,506 | 2,848 | 12,656 | 3,133 | 1,735 | 20 | 32 |
| | 28 | 5.31 | 18,685 | 20,554 | 671 | 126 | 738 | 139 | 137 | 31 | 30 |

| Region Name | Route Number | Length (sum of segments, miles) | Avg. Daily Vehicle Trips (Max) | Avg. Daily Person Trips (Max) | Lost time per day (hours) | | | | | Average Speed During Peak Hour | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | For all vehicles | For all vehicles, per mile | For all persons | For all persons, per mile | For all persons, per lane-mile | North/West bound | South/East bound |
| | 2 | 2.94 | 11,861 | 13,047 | 204 | 69 | 225 | 76 | 76 | 24 | 26 |
| Olympic | 302 | 1.04 | 23,016 | 25,318 | 1,367 | 1,314 | 1,503 | 1,445 | 1,440 | 10 | 15 |
| | 166 | 1.1 | 19,325 | 21,258 | 1,009 | 917 | 1,110 | 1,009 | 1,005 | 12 | 14 |
| | I-5 (Dupont to King Co.) | 10.39 | 203,816 | 264,961 | 7,822 | 753 | 10,169 | 979 | 245 | 49 | 40 |
| | 304 | 1.08 | 34,962 | 38,458 | 753 | 697 | 828 | 766 | 487 | 23 | 13 |
| | 507 | 3.57 | 15,112 | 16,623 | 1,970 | 552 | 2,167 | 607 | 603 | 14 | 37 |
| | 16 | 4.37 | 110,699 | 143,909 | 2,194 | 502 | 2,820 | 645 | 295 | 35 | 38 |
| | 303 | 4.39 | 44,341 | 48,775 | 1,701 | 387 | 1,871 | 426 | 213 | 20 | 24 |
| | 410 | 1.61 | 60,766 | 78,996 | 576 | 358 | 749 | 465 | 221 | 31 | 26 |
| | 7 | 5.64 | 43,165 | 56,115 | 1,969 | 349 | 2,559 | 454 | 206 | 28 | 30 |
| | 99 | 0.12 | 28,827 | 37,475 | 40 | 330 | 51 | 429 | 260 | 21 | 20 |
| | 101 | 3.47 | 91,658 | 119,155 | 1,129 | 325 | 1,286 | 370 | 231 | 27 | 33 |
| | 167 | 0.97 | 40,527 | 52,685 | 298 | 307 | 387 | 399 | 174 | 33 | 26 |
| | 310 | 0.51 | 35,077 | 38,585 | 141 | 277 | 155 | 304 | 127 | 21 | 23 |
| | 510 | 1.54 | 17,335 | 22,536 | 426 | 276 | 542 | 352 | 322 | 20 | 23 |
| | 104 | 3.65 | 17,638 | 19,402 | 1,008 | 276 | 1,109 | 304 | 302 | 24 | 35 |
| | 12 | 0.46 | 24,975 | 27,473 | 121 | 264 | 134 | 290 | 197 | 21 | 24 |
| | 161 | 5.91 | 47,801 | 62,141 | 1,332 | 225 | 1,732 | 293 | 206 | 22 | 21 |
| | 162 | 1.92 | 17,922 | 23,299 | 401 | 209 | 522 | 272 | 262 | 16 | 18 |
| | 3 | 6.03 | 73,695 | 81,065 | 992 | 164 | 1,091 | 181 | 138 | 33 | 35 |
| | 307 | 1.58 | 13,593 | 14,952 | 189 | 119 | 207 | 131 | 131 | 24 | 27 |
| | 20 | 1.15 | 16,096 | 17,706 | 124 | 108 | 136 | 119 | 118 | 25 | 26 |
| | 305 | 2.62 | 21,771 | 23,948 | 266 | 101 | 292 | 112 | 111 | 31 | 32 |
| Southwest | 500 | 7.41 | 65,024 | 84,531 | 4,094 | 553 | 5,323 | 718 | 335 | 30 | 22 |

| Region Name | Route Number | Length (sum of segments, miles) | Avg. Daily Vehicle Trips (Max) | Avg. Daily Person Trips (Max) | Lost time per day (hours) | | | | | Average Speed During Peak Hour | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | For all vehicles | For all vehicles, per mile | For all persons | For all persons, per lane-mile | | North/West bound | South/East bound |
| | 4 | 1.13 | 34,228 | 37,651 | 576 | 510 | 634 | 561 | 280 | 15 | 27 |
| | I-5 | 5.15 | 119,775 | 155,708 | 2,086 | 405 | 2,711 | 526 | 201 | 44 | 50 |
| | 503 | 3.98 | 36,906 | 47,978 | 1,567 | 394 | 1,993 | 501 | 242 | 20 | 23 |
| | 205 | 1.24 | 112,473 | 146,215 | 456 | 367 | 592 | 478 | 152 | 47 | 53 |
| | 507 | 2.68 | 12,893 | 14,182 | 695 | 259 | 765 | 285 | 284 | 13 | 29 |
| | 411 | 2.03 | 15,142 | 16,656 | 341 | 168 | 375 | 185 | 182 | 20 | 22 |
| | 14 | 3.8 | 24,031 | 31,240 | 513 | 135 | 667 | 176 | 166 | 39 | 38 |
| | 502 | 0.52 | 15,582 | 17,140 | 59 | 114 | 65 | 126 | 125 | 31 | 25 |
| | 432 | 0.15 | 15,142 | 16,656 | 15 | 102 | 17 | 113 | 111 | 28 | 27 |
| | 433 | 0.88 | 20,276 | 22,304 | 88 | 101 | 97 | 111 | 109 | 29 | 28 |
| Southcentral | 125 | 0.22 | 20,013 | 22,014 | 22 | 101 | 24 | 111 | 55 | 26 | 24 |
| | 395 | 1.09 | 38,393 | 42,232 | 106 | 97 | 117 | 107 | 60 | 39 | 37 |
| | 12 | 0.89 | 27,960 | 30,756 | 69 | 78 | 76 | 86 | 84 | 33 | 33 |
| | 24 | 0.08 | 20,271 | 22,298 | 5 | 61 | 5 | 67 | 66 | 31 | 30 |
| Eastern | 290 | 0.34 | 31,052 | 40,368 | 731 | 2,150 | 950 | 2,795 | 2,226 | 18 | 14 |
| | 270 | 0.7 | 19,866 | 21,853 | 1,308 | 1,868 | 1,439 | 2,055 | 1,433 | 13 | 30 |
| | 2 | 3.7 | 47,062 | 61,181 | 5,852 | 1,582 | 7,608 | 2,056 | 1,100 | 19 | 24 |
| | 27 | 0.74 | 27,112 | 35,246 | 383 | 518 | 427 | 576 | 365 | 17 | 21 |
| | 291 | 1.18 | 38,267 | 49,747 | 608 | 515 | 790 | 670 | 308 | 25 | 18 |
| | I-90 | 3.53 | 98,822 | 128,469 | 1,411 | 400 | 1,834 | 520 | 209 | 50 | 45 |
| | I-395 | 0.42 | 12,267 | 13,494 | 38 | 91 | 42 | 100 | 99 | 20 | 22 |

## Table A-B. Freight Mobility Chokepoints

| Region (see legend) | Project Name |
|---|---|
| PS-F | SR 519 Intermodal Access Project |
| PS | SR 509 South Access Completion |
| PS-F | East Marginal Way Ramps |
| PS-F | SR 509/Port of Tacoma Rd. Grade Separation |
| PS-F | SR 167, SR 509 to SR 161 |
| WW | Port of Longview Alternate Rail Corridor |
| GN | I-90 Snowshed |
| WW | Allen Street Bridge Replacement |
| PS-F | California St. Overcrossing/ Port of Everett |
| PS | Lincoln Ave. Grade Separation |
| PS-F | 41st St. Railway Overcrossing/ Riverfront Parkway |
| EW | Valley Mall Blvd. Extension |
| PS-F | South Spokane St. Viaduct |
| PS-F | South 277th St. (BNSF & UPSP) |
| PS-F | Shaw Rd. Extension |
| EW | Wine Country Rd. |
| EW | SR 397 Ainsworth Ave. Grade Crossing |
| PS-F | D St. Grade Separation |
| PS-F | 3rd St. SW/BNSF |
| PS-F | North Canyon Rd.Exten./BNSF Overcrossing |
| EW | Columbia Center Blvd. Railroad Crossing |
| PS-F | 8th St. East / BNSF Mainline Grade Separation |
| PS-F | S. 180th St. Grade Separation |
| EW | Colville Alternate Truck Route |
| EW | SR 125/ SR 12 Interconnect (Myra Rd. Exten.) |
| EW | Edison St. Railroad Crossing |
| EW | Washington St. Railroad Crossing |
| WW | Port of Kalama Industrial Park Bridge |
| PS-F | E. Marine View Drive Widening |
| PS | SR 18 Weyerhauser Way to SR 167 Truck Lane |
| EW | Port of Kennewick Road (Exten of Piert Rd.) |
| EW | SR 28, SR 2/97 to 9$^{th}$ St. |
| EW | I-90 Argonne to Sullivan |
| WW | SR 20 - Fredonia to I-5, Roadway Widening & Interchange Improvements |
| PS | S 228th Street Extension & Grade Separation |
| EW | City of Yakima Grade Separated Rail Crossing |
| PS | Duwamish Intelligent Transportation Systems (ITS) Project |
| WW | SR 543 - I-5 to International Boundary Widening & Border X'ing Improvements |
| PS | Lander Street Overcrossing |
| EW | US 12 - SR 124 to SR 730 |

| Region (see legend) | Project Name |
|---|---|
| WW | Grain Terminal Track Improvements |
| EW | US 395 Hillsboro Street Interchange |
| GN | I-90, Hyak to Easton Hill - Capacity Improvements |
| EW | Park Road/BNSF Grade Separation Project |
| WW | SR 3/304 Transportation Improvement Project: Navy Yard Highway Stage I-C |
| WW | SR 9 - SR 546/Nooksack Rd Vic to SR 547/Cherry St All-Weather Recon |
| EW | SR 27 - Pines Rd BNSF Grade Crossing Separation |
| EW | SR 240 & SR 224 Interchange & Railroad Overcrossing |
| EW | SR 17 - Pioneer Way to Stratford Rd Mobility Pr oject |
| EW | I-90 Sullivan Rd to Harvard Rd |
| WW | SR 432 Short Term Improvement/3rd Ave Off Ramp Widening |
| PS | 8th Street East/UP Railroad Undercrossing |

*May include federal, county, city, port, railroad, and other private and other state funds such as TIB and CRAB.

LEGEND:

EW – Eastern Washington
GN – Geographically Neutral
PS – Puget Sound
PS-F – Puget Sound-FAST Corridor
WW – Western Washington

# Appendix B – Catalog of Reported Transportation Needs

## FINDINGS

Transportation needs identified in this appendix reflect data collected from a variety of sources. If one were to add together all of the estimated "needs" presented in this appendix, total 20-year costs would exceed $150 billion (2000 dollars).

The term "need," as it is applied here, is imprecise at best. In many instances, for example, the term "transportation needs" means – *those 20-year expenditures that are necessary to achieve service objectives that have been identified through a statewide decision-making process*. In other instances, however, no such statewide process has been pursued, and consequently, no uniform criteria (or *service objectives*) have been identified.

In instances where common criteria for defining needs have *not* been identified, or in instances where estimation of needs does not extend for the full 20-year period, projects reflect conservative projections. For instance, in the absence of a statewide process to identify the minimum service objectives for County Ferry systems, the needs reported for maintenance and preservation of County Ferry systems reflect only the minimum expenditures necessary to keep these systems running. Furthermore, unlike the figures reported for Local Public Transportation and State Ferries, the estimated needs for maintenance or preservation of County Ferries do not include the costs of system operation. However, in other instances, such as estimates of need for Travel Demand Management programs, the estimates reflect recommendations by task forces and committees that have not been formally adopted by authorized budget agencies. As a result, the estimates are conservative in some areas, and they potentially reflect wish lists in other areas. Thus, it is probably not safe to say that the $150 billion total needs figure is a conservative number; but absent a narrowing of the definition of the term "need," revisions based on improved data might push the figure higher or lower, depending on the reporting agency and point of contact.

The needs identified in this appendix do not include marine ports and navigation, nor do they include aviation needs beyond the small share represented by State-owned airports.

## NOTES ON SOURCES AND DATA

Most of the figures contained within this document represent 20-year needs. According to staff members at WSDOT as well as representatives of cities and counties, comparable needs data for different time periods are

generally not available on a statewide level. To estimate needs over different time spans – such as 1-year, 6-year, and 10-year needs – the agency contacts generally recommended dividing the 20-year figures to obtain the desired time period.

Since a significant gap often exists between identified needs and actual funding levels, these figures do not attempt to examine enacted budget levels. Budgets can be reviewed to obtain figures on historic spending levels, but these amounts do not necessarily bear a direct relationship to actual transportation needs. Accordingly, this document focuses on projected needs identified in a number of planning documents, rather than transportation budgets and appropriations. Since these figures focus on needs rather than budgets or revenues, the impacts of the passage of Initiative 695 do not necessarily have a direct effect on these numbers, though reduced revenues could lead to some changes in needs. (For example, if revenues are inadequate to fund sufficient road maintenance levels, the costs of preservation activities could increase.)

Most of these figures, including those from *Washington's Transportation Plan* and the *State Highway System Plan*, do not account for inflation over the 20-year period. These figures are intended to represent total needs, not just the WSDOT share; accordingly, some numbers include expected contributions or revenues from the private sector.

The primary sources for this information include the following documents, though many additional materials were referenced for specific sections (see Table 5: Notes on Methods and Sources Used in Determining Transportation System Needs for full citations).

| | | |
|---|---|---|
| HSP | *State Highway System Plan, 1999-2018* | Jan. 1998 |
| WTP | *Washington's Transportation Plan, 1997-2016* | Apr. 1996 |
| PTP | *Public Transportation & Intercity Rail Passenger Plan, 1997-2016* | Dec. 1996 |

As noted in the supporting tables, new information became available very late in the process of gathering this information. In some cases, new information overlapped with old information, but included valuable updates. The estimates reflect, to the extent possible, attempts to eliminate any double counting that may have arisen in this process. As a result of these limitations, the needs numbers are considered "ballpark estimates" only.

Contacts at various state agencies and organizations also provided a great deal of information and assistance. The following individuals were particularly helpful:

| | |
|---|---|
| Diane Carlson | Washington State Department of Transportation |
| Paul Gamble | Washington State Department of Transportation |

| | |
|---|---|
| Charlie Howard | Washington State Department of Transportation |
| Ken Kirkland | Washington State Department of Transportation |
| Chris Mudgett | County Road Administration Board |
| Karen Schmidt | Freight Mobility Strategic Investment Board |
| Jim Seitz | Association of Washington Cities |

## Table 1: Summary of Estimated 20-Year Needs

| *Category* | 20-year needs |
|---|---|
| **Maintenance & Preservation Projects** | |
| State highways | $9,002,000,000 |
| County roads | $16,849,000,000 |
| City streets | $5,663,000,000 |
| State ferries | $3,070,000,000 |
| County ferries | $141,000,000 |
| Local public transit | $20,286,000,000 |
| Paratransit | $3,544,000,000 |
| State Public Transportation System | $17,000,000 |
| Intercity passenger rail | $575,000,000 |
| State airports | $1,000,000 |
| **Total** | **$59,150,000,000** |
| **Expansion Projects** | |
| Mobility - State Highways* | $42,389,000,000 |
| Mobility - County Roads | $6,977,000,000 |
| Mobility - City Streets | $3,736,000,000 |
| Puget Sound Core Freeway HOV Lanes | $1,820,000,000 |
| Safety - Highway | $2,272,000,000 |
| Safety - County Roads | $2,046,000,000 |
| Safety - City Streets | $2,046,000,000 |
| Environmental Retrofit - State Highways | $797,000,000 |
| Environmental Retrofit - County Roads | $721,000,000 |
| Environmental Retrofit - City Streets | $366,000,000 |
| Freight mobility (WTP Econ. Initiatives) | $861,000,000 |
| Freight Rail | $3,585,000,000 |
| High Capacity Transit (Excluding TDM) | $10,080,000,000 |
| Local Public Transit | $5,279,000,000 |
| Paratransit | $393,000,000 |
| State ferries | $835,000,000 |
| State Public Transportation Program | $390,000,000 |
| Intercity rail | $2,721,000,000 |
| State Airports | $2,000,000 |
| Non-motorized transportation (bikes/peds) | $1,814,000,000 |
| **Total** | **$89,130,000,000** |
| **Optimization Projects** | |
| Traffic operations – state highways | $484,000,000 |
| State Transportation Demand Management | $1,500,000,000 |
| **Total** | **$1,984,000,000** |
| **Grand Total** | **$150,264,000,000** |

**Excludes Puget Sound Core Freeway HOV Lanes; Includes other state HOV lanes*

Note: For a breakdown of the components of needs listed above, see Tables 2, 3, and 4, with accompanying notes in Table 5 providing a line-by-line description of caveats, sources, and the methodology used to generate each estimate.

# Table 2: Estimated 20-Year Transportation Maintenance & Preservation Needs

| Category | Source | Year$ Reported | 20-year needs - Reported (Millions $) | 20-year needs - Adjusted to 2000 Dollars (Millions $) | Notes |
|---|---|---|---|---|---|
| ***State Highways*** | | | | | |
| Maintenance | | | | $3,888 | |
| *Original Estimate* | HSP | 1997 | $2,720 | $2,928 | A |
| *New Law Additions* | WSDOT | 2000 | $960 | $960 | A |
| Preservation | HSP | 1997 | $4,750 | $5,114 | B |
| *Pavements (Subprogram P1)* | HSP | 1997 | *$2,510* | *$2,702* | C |
| *Structures (Subprogram P2)* | HSP | 1997 | *$1,530* | *$1,647* | D |
| *Other Facilities (Subprogram P3)* | HSP | 1997 | *$710* | *$764* | E |
| **Maintenance & Preservation Total** | | | | **$9,002** | F |
| ***County Roads*** | | | | | |
| Maintenance | Ribbon | 1997 | $6,820 | $7,343 | G |
| Preservation | Ribbon | 1997 | $8,830 | $9,507 | H |
| **Maintenance & Preservation Total** | Ribbon/Calc. | 1997 | **$15,650** | **$16,849** | I |
| ***City Streets*** | | | | | |
| Maintenance | Ribbon | 1997 | $2,460 | $2,649 | J |
| Preservation | Ribbon | 1997 | $2,800 | $3,015 | K |
| **Maintenance & Preservation Total** | Ribbon/Calc. | 1997 | **$5,260** | **$5,663** | L |
| ***Ferries - State*** | | | | | |
| Maintenance & Operation | WTP | 1995 | $2,300 | $2,608 | M |
| Preservation | WTP | 1995 | $1,010 | $1,145 | N |
| **Maintenance, Operation, & Preservation Total** | WTP/Calc. | 1995 | **$3,310** | **$3,070** | O |
| ***Ferries - County*** | | | | | |
| **Necessary Maintenance** | Ribbon | 1998 | **$133** | **$141** | P |
| ***Local Public Transit*** | | | | | |
| **Maintenance, Operation, & Preservation** | | | | **$20,286** | |
| *Maintenance, Operation, & Preservation* | WTP/PTP | 1995 | **$16,939** | **$19,206** | Q |
| *New Law Additions* | | 2000 | **$1,080** | **$1,080** | Q |
| ***Paratransit*** | | | | | |
| **Maintenance, Operation, & Preservation** | WTP/PTP | 1995 | **$3,126** | **$3,544** | R |
| ***State Public Transportation Program*** | | | | | |
| Operation & Maintenance | WTP/PTP | 1995 | $10 | $11 | S |
| Preservation of Facilities and Equipment | WTP/PTP | 1995 | $5 | $6 | T |
| **Maintenance, Operation, & Preservation Total** | WTP/PTP | 1995 | **$15** | **$17** | U |
| ***Intercity Passenger Rail*** | | | | | |
| **Maintenance, Operation, & Preservation** | WTP/PTP | 1995 | **$507** | **$575** | V |
| ***State Airports*** | | | | | |
| **Maintenance & Preservation** | WTP | 1995 | **$1** | **$1** | W |

Note: For a line-by-line description of the sources and the methodology used to generate each estimate, see Table 5 Notes on Methods and Sources Used in Determining Transportation System Needs. The alphabetical key assigned to each line of the table marks a corresponding discussion of that item.

# Table 3: Estimated 20-Year Transportation Expansion Needs

| *Category* | Source | Year$ Reported | 20-year needs - Reported (Millions $) | 20-year needs - Adjusted to 2000 Dollars (Millions $) | Notes |
|---|---|---|---|---|---|
| Mobility - State Highways (no Puget Sound HOV) | HSP/Calc. | | | $42,389 | **AA** |
| *Urban and Rural Mobility; Access Control* | *HSP* | *1997* | *$27,230* | *$29,317* | **BB** |
| *Development Mitigation Partnering* | *HSP* | *1997* | *$50* | *$54* | **CC** |
| *Urban Bicycle Connections* | *HSP* | *1997* | *$110* | *$118* | **DD** |
| *Additional New Law Projects* | *WSDOT* | *2000* | *$12,900* | *$12,900* | **AA** |
| Mobility - County Roads | Ribbon | 1997 | $6,480 | $6,977 | **EE** |
| Mobility - City Streets | Ribbon | 1997 | $3,470 | $3,736 | **FF** |
| Puget Sound Core Freeway HOV Lanes | HSP | 1997 | $1,690 | $1,820 | **GG** |
| Safety - Highway | HSP-MU | 1997 | $2,110 | $2,272 | **HH** |
| *Collision reduction:* | | | | | |
| *High accident locations* | *HSP-MU* | *1997* | *$250* | *$269* | **II** |
| *High accident corridor* | *HSP-MU* | *1997* | *$630* | *$678* | **JJ** |
| *Collision prevention:* | | | | | |
| *Iterstate* | *HSP-MU* | *1997* | *$120* | *$129* | **KK** |
| *Roadside encroachments* | *HSP-MU* | *1997* | *$440* | *$474* | **LL** |
| *Signals and channelization* | *HSP-MU* | *1997* | *$130* | *$140* | **MM** |
| *Divided highway at-grate intersections* | *HSP-MU* | *1997* | *$510* | *$549* | **NN** |
| *Truck inspection* | *HSP-MU* | *1997* | *$20* | *$22* | **OO** |
| *Pedestrian risk* | *HSP-MU* | *1997* | *$10* | *$11* | **PP** |
| Safety - County Roads | Ribbon | 1997 | $1,900 | $2,046 | **QQ** |
| Safety - City Streets | Ribbon | 1997 | $1,900 | $2,046 | **RR** |
| Environmental Retrofit - State Highways | HSP-MU | 1997 | $740 | $797 | **SS** |
| *Stormwater retrofit* | *HSP-MU* | *1997* | *$650* | *$700* | **TT** |
| *Fish passage barriers* | *HSP-MU* | *1997* | *$40* | *$43* | **UU** |
| *Noise reduction measures* | *HSP-MU* | *1997* | *$50* | *$54* | **VV** |
| Environmental Retrofit - County Roads | Ribbon | 1997 | $670 | $721 | **WW** |
| Environmental Retrofit - City Streets | Ribbon | 1997 | $340 | $366 | **XX** |
| Freight mobility (WTP Econ. Initiatives) | HSP | 1997 | $800 | $861 | **YY** |
| *All Weather Highways* | *HSP* | *1997* | *$230* | *$248* | **ZZ** |
| *Trunk System Completion* | *HSP* | *1997* | *$290* | *$312* | **AAA** |
| *Interstate Avalanche and Flood Closures* | *HSP* | *1997* | *$180* | *$194* | **BBB** |
| *Restricted Bridges* | *HSP* | *1997* | *$100* | *$108* | **CCC** |
| Freight Rail | WTP | 1995 | $3,162 | $3,585 | **DDD** |
| *Mainline and terminals* | *WTP* | *1995* | *$2,646* | *$3,000* | **EEE** |
| *Branchline preservation* | *WTP* | *1995* | *$501* | *$568* | **FFF** |
| *Corridor preservation* | *WTP* | *1995* | *$15* | *$17* | **GGG** |
| High Capacity Transit (Excluding TDM) | WTP/PTP | 1995 | $4,473 | $10,080 | **HHH** |
| Local Public Transit | WTP/PTP | 1995 | $3,871 | $5,279 | **III** |
| Paratransit | WTP/PTP | 1995 | $347 | $393 | **JJJ** |
| State ferries (through 2007 only)* | WTP | ***2000*** | $835 | $835 | **KKK** |
| State Public Transportation Program | WTP/PTP | 1995 | $344 | $390 | **LLL** |
| Intercity rail | WTP/PTP | 1995 | $2,400 | $2,721 | **MMM** |
| State Airports | WTP | 1995 | $2 | $2 | **NNN** |
| Non-motorized transportation (bikes/peds) | WTP | 1995 | $1,600 | $1,814 | **OOO** |
| *Sidewalks (36%)* | *WTP/Calc.* | *1995* | *$576* | *$653* | **PPP** |
| *Paths and trails (24%)* | *WTP/Calc.* | *1995* | *$384* | *$435* | **QQQ** |
| *Bike lanes/shoulders (23%)* | *WTP/Calc.* | *1995* | *$368* | *$417* | **RRR** |
| *Crossing improvements (8%)* | *WTP/Calc.* | *1995* | *$128* | *$145* | **SSS** |
| *Improvements for disabled users (5%)* | *WTP/Calc.* | *1995* | *$80* | *$91* | **TTT** |
| *Safety education and enforcement (4%)* | *WTP/Calc.* | *1995* | *$64* | *$73* | **UUU** |

Note: For a line-by-line description of the sources and the methodology used to generate each estimate, see Table 5 Notes on Methods and Sources Used in Determining Transportation System Needs. The alphabetical key assigned to each line of the table marks a corresponding discussion of that item.

# Table 4: Estimated 20-Year Transportation Optimization Needs

| *Category* | Source | Year$ Reported | 20-year needs - Reported (Millions $) | 20-year needs - Adjusted to 2000 Dollars (Millions $) | Notes |
|---|---|---|---|---|---|
| Traffic Operations - State Highways | HSP | 1997 | $450 | $484 | **VVV** |
| State Transportation Demand Management | CTR Task Force | 2000 | $1,500 | $1,500 | **WWW** |

Note: For a line-by-line description of the sources and the methodology used to generate each estimate, see Table 5 Notes on Methods and Sources Used in Determining Transportation System Needs. The alphabetical key assigned to each line of the table marks a corresponding discussion of that item.

# Table 5: Notes on Methods and Sources Used in Determining Transportation System Needs

| **Notes on Identified Transportation Needs** | |
|---|---|
| A | *Original Estimates.* Figures from Washington State Department of Transportation, *State Highway System Plan, 1999-2018* (Olympia, Wash.: WSDOT, January 1998), p. 9; 20-year costs; 1997 dollars. "Highway Maintenance" (Program M) includes the "day to day operation, maintenance, and repair of over 7,000 miles of state highway and associated facilities," covering the following items: roadway maintenance and operation; drainage maintenance and slope repairs; roadside and landscape maintenance; bridge and urban tunnel maintenance; snow and ice control; traffic services; safety rest areas; supervision, training, and support maintenance; and third party damages and disaster maintenance. See also Washington State Department of Transportation, *Washington's Transportation Plan, 1997-2016* (Olympia, Wash.: WSDOT, April 1996); the WTP lists $2,440,000,000 for "Service Objective Needs" (the total needs identified). This figure represents a 20-year total, in 1995 dollars. All figures are rounded to the nearest million. According to personal communication with Ken Kirkland (360-705-7851), State Maintenance Engineer, Washington State Department of Transportation (April 2000), the 20-year needs outlined in the *State Highway System Plan* are intended to achieve a "C+" maintenance service level, as defined in Washington State Department of Transportation, Maintenance Accountability Process Manual (Olympia, Wash.: WSDOT, July 1999), Chapter 5, Service Level, pp. 5–10-11. According to WSDOT, Service Level C is defined as "a medium maintenance service level in which the roadway and associated features are in fair condition. Systems may occasionally be inoperable and not available to users. Short-term delays may be experienced when repairs are being made, but would not be excessive. At this maintenance service level, very few deficiencies are present in safety related activities, but moderate deficiencies exist for investment protection activities and significant aesthetic related deficiencies. Preventative maintenance is deferred for most activities except safety-critical work. More emphasis is placed on routine maintenance activities, and corrective maintenance occurs as necessary. A backlog of deficiencies begins to build up that will have to be dealt with eventually, at a higher cost. Some roadway structural problems begin to appear due to the long-term deterioration of the system. There is a noticeable decrease in appearance." Kirkland noted that these figures do not include inflation, nor do they assume any increases in the size of the transportation system requiring maintenance. If additional improvements are added, he recommended increasing the biennial maintenance requirements by 0.5% of the improvement amount; for example, if $500 million is spent on new construction in a biennium, the maintenance costs should be increased by $2.5 million in each subsequent biennium.<br><br>*New Law Estimates.* Additional costs were added as needs based on the New Law Capital Construction Program sections of the *Washington State Ferries and Highway Construction Program, Legislative Book 2001-2003 Biennium Transportation Region*, September 2000. Double counting of projects included in the State Highway System Plan was identified and corrected for, to the extent identifiable. |

| Notes on Identified Transportation Needs | |
|---|---|
| B | Figures from *Washington State Department of Transportation, State Highway System Plan, 1999-2018 (Olympia, Wash.:* WSDOT, January 1998), pp. 10-12; 20-year costs; 1997 dollars. "Highway Preservation" (Program P) includes "Pavements" (Subprogram P1), "Structures" (Subprogram P2), and "Other Facilities" (Subprogram P3). P1 (Pavements): "WSDOT's policy is to resurface at the point of lowest lifecycle cost"; covers 17,600 lane-miles of state highways. P2 (Structures): 2900 bridges on state highway system; nearly one-third were constructed over 40 years ago and will require major rehabilitation or replacement in the future; program also includes periodic bridge painting, bridge deck rehabilitation, tunnel repair, bridge inspection and testing, and seismic retrofit work. P3 (Other Facilities) includes repair of unstable slopes; failing drainage systems; outdated electrical, electronic, and mechanical systems; refurbishment of safety rest areas; and construction of truck weighing facilities. See also Washington State Department of Transportation, *Washington's Transportation Plan, 1997-2016* (Olympia, Wash.: WSDOT, April 1996); the WTP lists $4,000,000,000 for "Service Objective Needs" (total needs identified). This figure represents a 20-year total, in 1995 dollars. |
| C | Figures from Washington State Department of Transportation, *State Highway System Plan, 1999-2018* (Olympia, Wash.: WSDOT, January 1998), pp. 10-11; 20-year costs; 1997 dollars. "Highway Preservation" (Program P) includes "Pavements" (Subprogram P1), "Structures" (Subprogram P2), and "Other Facilities" (Subprogram P3). P1 (Pavements): "WSDOT's policy is to resurface at the point of lowest lifecycle cost"; 17,600 lane-miles of state highways. See also Washington State Department of Transportation, *Washington's Transportation Plan, 1997-2016* (Olympia, Wash.: WSDOT, April 1996); the WTP lists $4,000,000,000 for "Service Objective Needs" (total needs identified). This figure represents a 20-year total, in 1995 dollars. |
| D | Figures from Washington State Department of Transportation, *State Highway System Plan, 1999-2018* (Olympia, Wash.: WSDOT, January 1998), p. 11; 20-year costs; 1997 dollars; does not include inflation. "Highway Preservation" (Program P) includes "Pavements" (Subprogram P1), "Structures" (Subprogram P2), and "Other Facilities" (Subprogram P3). P2 (Structures): 2900 bridge on state highway system; nearly one-third were constructed over 40 years ago and will require major rehabilitation or replacement in the future; program also includes periodic bridge painting, bridge deck rehab, tunnel repair, bridge inspection and testing, seismic retrofit work. See also Washington State Department of Transportation, *Washington's Transportation Plan, 1997-2016* (Olympia, Wash.: WSDOT, April 1996); the WTP lists $4,000,000,000 for "Service Objective Needs" (total needs identified). This figure represents a 20-year total, in 1995 dollars. |

| Notes on Identified Transportation Needs | |
|---|---|
| E | Figures from Washington State Department of Transportation, *State Highway System Plan, 1999-2018* (Olympia, Wash.: WSDOT, January 1998), p. 12; 20-year costs; 1997 dollars. "Highway Preservation" (Program P) includes "Pavements" (Subprogram P1), "Structures" (Subprogram P2), and "Other Facilities" (Subprogram P3). P3 (Other Facilities) includes repair of unstable slopes; failing drainage systems; outdated electrical, electronic, and mechanical systems; refurbishment of safety rest areas; and construction of truck weighing facilities. See also Washington State Department of Transportation, *Washington's Transportation Plan, 1997-2016* (Olympia, Wash.: WSDOT, April 1996); the WTP lists $4,000,000,000 for "Service Objective Needs" (total needs identified). This figure represents a 20-year total, in 1995 dollars. |
| F | Calculated from Maintenance (Program M) and Preservation (Program P) needs listed in Washington State Department of Transportation, *State Highway System Plan, 1999-2018* (Olympia, Wash.: WSDOT, January 1998), p. 22 (see subsequent footnotes); 20-year costs; 1997 dollars. |
| G | Washington State Department of Transportation, "County Roadway Needs" (revised ribbon chart), received via personal communication with Diane Carlson (360-705-7371), WSDOT, April 2000. The chart shows total county roadway needs of $27,200,000,000 (1997 dollars), distributed among the following categories: maintenance, preservation, environmental retrofit, mobility, administration, safety, and economic initiatives. The most recent version of the ribbon chart shows a greater total need than listed in a previous version of the chart ($26,200,000,000). See also Washington State Department of Transportation, *Washington's Transportation Plan, 1997-2016* (Olympia, Wash.: WSDOT, April 1996); the WTP lists "Service Objective Needs" (total needs identified) for county roads totaling $23,000,000,000. This figure represents a 20-year total, in 1995 dollars; however, it is not broken down in separate categories, such as maintenance, preservation, and new construction. Christina Halvorson of ECONorthwest spoke with Chris Mudgett (360-753-5989) of the County Road Administration Board on several occasions in April 2000 regarding the needs figures for counties. Mudgett expressed some concerns about the WSDOT figures, but CRAB does not have better figures to provide without requesting the information from all 39 counties. To conduct such a study would first require agreement on common criteria for defining needs, including appropriate levels of maintenance and preservation activities. Based on the 1988 *Road Jurisdiction Study* report, Mudgett estimated "annual 'necessary' maintenance costs" for counties totaling $547,773,176 for roads and $3,329,238 for bridges each year. These figures are based on the statewide average costs identified in the 1988 RJC study, adjusted for inflation to 1998 dollars. Without making further inflation adjustments, these figures would yield a 20-year total maintenance need of $11,022,000,000 (rounded to the nearest million). State of Washington, Legislative Transportation Committee, *Route 2000 – Washington Road Jurisdiction Study: Phase II – Analysis of Roadway Needs and Funding* (Olympia, Wash.: LTC, November 1988), study conducted by Price Waterhouse, Wilbur Smith Associates, Booz Allen & Hamilton, Inc., Howard Needles Tammen & Bergendoff, and Miller and Associates. |

| Notes on Identified Transportation Needs | |
|---|---|
| H | Washington State Department of Transportation, "County Roadway Needs" (revised ribbon chart), received via personal communication with Diane Carlson (360-705-7371), WSDOT, April 2000. The chart shows total county roadway needs of $27,200,000,000 (1997 dollars), distributed among the following categories: maintenance, preservation, environmental retrofit, mobility, administration, safety, and economic initiatives. The most recent version of the ribbon chart shows a greater total need than listed in a previous version of the chart ($26,200,000,000). See also Washington State Department of Transportation, *Washington's Transportation Plan, 1997-2016* (Olympia, Wash.: WSDOT, April 1996); the WTP lists "Service Objective Needs" (total needs identified) for county roads totaling $23,000,000,000. This figure represents a 20-year total, in 1995 dollars; however, it is not broken down in separate categories, such as maintenance, preservation, and new construction. Christina Halvorson of ECONorthwest spoke with Chris Mudgett (360-753-5989) of the County Road Administration Board on several occasions in April 2000 regarding the needs figures for counties. Mudgett expressed some concerns about the WSDOT figures, but CRAB does not have better figures to provide without requesting the information from all 39 counties. To conduct such a study would first require agreement on common criteria for defining needs, including appropriate levels of maintenance and preservation activities. Based on the 1988 *Road Jurisdiction Study* report, Mudgett estimated "annual 'necessary' maintenance costs" for counties totaling $547,773,176 for roads and $3,329,238 for bridges each year. These figures are based on the statewide average costs identified in the 1988 RJC study, adjusted for inflation to 1998 dollars. Without making further inflation adjustments, these figures would yield a 20-year total maintenance need of $11,022,000,000 (rounded to the nearest million). State of Washington, Legislative Transportation Committee, *Route 2000 – Washington Road Jurisdiction Study: Phase II – Analysis of Roadway Needs and Funding* (Olympia, Wash.: LTC, November 1988), study conducted by Price Waterhouse, Wilbur Smith Associates, Booz Allen & Hamilton, Inc., Howard Needles Tammen & Bergendoff, and Miller and Associates. |
| I | Calculated from Maintenance and Preservation needs listed in Washington State Department of Transportation, "County Roadway Needs" (revised ribbon chart), received via personal communication with Diane Carlson (360-705-7371), WSDOT, April 2000 (see notes G and H). |

| Notes on Identified Transportation Needs | |
|---|---|
| J | Washington State Department of Transportation, "Cities Roadway Needs" (revised ribbon chart), received via personal communication with Diane Carlson (360-705-7371), WSDOT, April 2000. The chart shows total city roadway needs of $11,600,000,000 (1997 dollars), distributed among the following categories: maintenance, preservation, environmental retrofit, urban growth, economic initiatives, safety, administration, and mobility. The most recent version of the ribbon chart shows a greater total need than listed in a previous version of the chart ($10,400,000,000). See also Washington State Department of Transportation, *Washington's Transportation Plan, 1997-2016* (Olympia, Wash.: WSDOT, April 1996); the WTP lists "Service Objective Needs" (total needs identified) for city streets totaling $12,300,000,000. This figure represents a 20-year total, in 1995 dollars; however, it is not broken down in separate categories, such as maintenance, preservation, and new construction. Christina Halvorson of ECONorthwest spoke with Jim Seitz (360-753-4137) of the Association of Washington Cities in April 2000 regarding the needs figures for cities. Seitz had some reservations about the WSDOT figures, but he said it was the best figure to use because AWC does not have figures of its own. To collect the needed information from the cities would first require agreement on common criteria for defining "needs" versus "wants." Seitz mentioned the WSDOT's "Road and Street" report collects information from cities on their annual road expenditures, but it does not attempt to quantify their transportation needs. |
| K | Washington State Department of Transportation, "Cities Roadway Needs" (revised ribbon chart), received via personal communication with Diane Carlson (360-705-7371), WSDOT, April 2000. The chart shows total city roadway needs of $11,600,000,000 (1997 dollars), distributed among the following categories: maintenance, preservation, environmental retrofit, urban growth, economic initiatives, safety, administration, and mobility. The most recent version of the ribbon chart shows a greater total need than listed in a previous version of the chart ($10,400,000,000). See also Washington State Department of Transportation, *Washington's Transportation Plan, 1997-2016* (Olympia, Wash.: WSDOT, April 1996); the WTP lists "Service Objective Needs" (total needs identified) for city streets totaling $12,300,000,000. This figure represents a 20-year total, in 1995 dollars; however, it is not broken down in separate categories, such as maintenance, preservation, and new construction. Christina Halvorson of ECONorthwest spoke with Jim Seitz (360-753-4137) of the Association of Washington Cities in April 2000 regarding the needs figures for cities. Seitz had some reservations about the WSDOT figures, but he said it was the best figure to use because AWC does not have figures of its own. To collect the needed information from the cities would first require agreement on common criteria for defining "needs" versus "wants." Seitz mentioned the WSDOT's "Road and Street" report collects information from cities on their annual road expenditures, but it does not attempt to quantify their transportation needs. |
| L | Calculated from Maintenance and Preservation needs listed in Washington State Department of Transportation, "Cities Roadway Needs" (revised ribbon chart), received via personal communication with Diane Carlson (360-705-7371), WSDOT, April 2000 (see notes J and K). |

| Notes on Identified Transportation Needs | |
|---|---|
| M | Washington State Department of Transportation, *Washington's Transportation Plan, 1997-2016* (Olympia, Wash.: WSDOT, April 1996). These figures are from the "WTP Target" (the financially constrained plan), not the "Service Objective Needs" (total needs identified), as used in other categories, because the WTP does not include Service Objective Needs for state ferries. These figures represent 20-year totals, in 1995 dollars, rounded to the nearest million. According to the WTP, the cost to achieve the service objectives outlined in the plan "exceeds $4 billion (in 1993 dollars) over the next 20 years" (p. 25). |
| N | Washington State Department of Transportation, *Washington's Transportation Plan, 1997-2016* (Olympia, Wash.: WSDOT, April 1996). These figures are from the "WTP Target" (the financially constrained plan), not the "Service Objective Needs" (total needs identified), as used in other categories, because the WTP does not include Service Objective Needs for state ferries. These figures represent 20-year totals, in 1995 dollars, rounded to the nearest million. |
| O | Washington State Department of Transportation, *Washington's Transportation Plan, 1997-2016* (Olympia, Wash.: WSDOT, April 1996). These figures are from the "WTP Target" (the financially constrained plan), not the "Service Objective Needs" (total needs identified), as used in other categories, because the WTP does not include Service Objective Needs for state ferries. These figures represent 20-year totals, in 1995 dollars, rounded to the nearest million. According to the WTP, the cost to achieve the service objectives outlined in the plan "exceeds $4 billion (in 1993 dollars) over the next 20 years" (p. 25). |
| P | In addition to the Washington State Ferries, Pierce, Skagit, Wahkiakum, and Whatcom counties also offer county ferry service, which is not covered in Washington's Transportation Plan. Based on the 1988 report of the Roads Jurisdiction Committee, Chris Mudgett of the County Road Administration Board estimated "annual 'necessary' maintenance costs" for county ferries of $6,668,594. These figures are based on the average costs identified in the RJC study, adjusted for inflation to 1998 dollars. Without making further inflation adjustments, these figures yield a 20-year cost of approximately $133,000,000 for maintaining county ferries. According to Mudgett, this figure does not include costs of operations, preservation, or system improvements. As an example, Pierce County's *1999-2012 Fourteen-Year Ferry Program* outlines expected operations, maintenance, and capital expenditures (which may be less than total needs) of $34,323,000 for the years 1999 through 2012. Using the average annual expenditure, without making further inflation adjustments, this figure would translate into a 20-year cost of about $49,000,000. |

| Notes on Identified Transportation Needs | |
|---|---|
| Q | Washington State Department of Transportation, *Washington's Transportation Plan, 1997-2016* (Olympia, Wash.: WSDOT, April 1996), pp. 3, 34. This figure represents "Service Objective Needs" (total needs identified), and it is a 20-year total, in 1995 dollars, rounded to the nearest million. This figure covers preservation of "existing public transportation service levels" ($14,161,000,000) as well as preservation of "existing public transportation of facilities and equipment" ($2,778,000,000). Accordingly, it may be more appropriate to consider this "preservation" figure as covering the costs of maintenance and operations activities as well. See also Washington State Department of Transportation, *Public Transportation and Intercity Rail Passenger Plan for Washington State, 1997-2016* (Olympia, Wash.: WSDOT, December 1996). Personal communication with Paul Gamble (360-705-7912), WSDOT, April 2000.<br><br>*New Law Estimates.* Additional costs were added as needs based on the New Law Capital Construction Program sections of the *Washington State Ferries and Highway Construction Program, Legislative Book 2001-2003 Biennium Transportation Region*, September 2000. Double counting of projects included in the State Highway System Plan was identified and corrected for, to the extent identifiable. |
| R | Washington State Department of Transportation, *Washington's Transportation Plan, 1997-2016* (Olympia, Wash.: WSDOT, April 1996), pp. 3, 34. This figure represents "Service Objective Needs" (total needs identified), and it is a 20-year total, in 1995 dollars, rounded to the nearest million; it covers preservation of "existing public transportation service levels." See also Washington State Department of Transportation, *Public Transportation and Intercity Rail Passenger Plan for Washington State, 1997-2016* (Olympia, Wash.: WSDOT, December 1996). Personal communication with Paul Gamble (360-705-7912), WSDOT, April 2000. |
| S | Washington State Department of Transportation, *Washington's Transportation Plan, 1997-2016* (Olympia, Wash.: WSDOT, April 1996), pp. 3, 34. This figure represents "Service Objective Needs" (total needs identified), and it is a 20-year total, in 1995 dollars, rounded to the nearest million. This figure covers preservation of "existing public transportation service levels" ($10,000,000) as well as preservation of "existing public transportation of facilities and equipment" ($5,000,000). See also Washington State Department of Transportation, *Public Transportation and Intercity Rail Passenger Plan for Washington State, 1997-2016* (Olympia, Wash.: WSDOT, December 1996). Personal communication with Paul Gamble (360-705-7912), WSDOT, April 2000. |

| Notes on Identified Transportation Needs | |
|---|---|
| T | Washington State Department of Transportation, *Washington's Transportation Plan, 1997-2016* (Olympia, Wash.: WSDOT, April 1996), pp. 3, 34. This figure represents "Service Objective Needs" (total needs identified), and it is a 20-year total, in 1995 dollars, rounded to the nearest million. This figure covers preservation of "existing public transportation service levels" ($10,000,000) as well as preservation of "existing public transportation of facilities and equipment" ($5,000,000). See also Washington State Department of Transportation, *Public Transportation and Intercity Rail Passenger Plan for Washington State, 1997-2016* (Olympia, Wash.: WSDOT, December 1996). Personal communication with Paul Gamble (360-705-7912), WSDOT, April 2000. |
| U | Washington State Department of Transportation, *Washington's Transportation Plan, 1997-2016* (Olympia, Wash.: WSDOT, April 1996), pp. 3, 34. This figure represents "Service Objective Needs" (total needs identified), and it is a 20-year total, in 1995 dollars, rounded to the nearest million. This figure covers preservation of "existing public transportation service levels" ($10,000,000) as well as preservation of "existing public transportation of facilities and equipment" ($5,000,000). See also Washington State Department of Transportation, *Public Transportation and Intercity Rail Passenger Plan for Washington State, 1997-2016* (Olympia, Wash.: WSDOT, December 1996). Personal communication with Paul Gamble (360-705-7912), WSDOT, April 2000. |
| V | Washington State Department of Transportation, *Washington's Transportation Plan, 1997-2016* (Olympia, Wash.: WSDOT, April 1996), pp. 46-47. This figure represents "Service Objective Needs" (total needs identified), and it is a 20-year total, in 1995 dollars, rounded to the nearest million. This figure includes $192,700,000 in WSDOT costs and $314,300,000 in costs paid by others, including Amtrak, Oregon, British Columbia, local agencies, private railroads, and train riders. Operating revenues are projected to contribute $85,000,000, yielding net costs of $422,000,000. See also Washington State Department of Transportation, *Public Transportation and Intercity Rail Passenger Plan for Washington State, 1997-2016* (Olympia, Wash.: WSDOT, December 1996). |
| W | Washington State Department of Transportation, *Washington's Transportation Plan, 1997-2016* (Olympia, Wash.: WSDOT, April 1996), pp. 27-28. This figure represents "Service Objective Needs" (total needs identified) for State-owned airports only. This figure is a 20-year total, in 1995 dollars, rounded to the nearest million. |

| Notes on Identified Transportation Needs | |
|---|---|
| AA | Calculated from Washington State Department of Transportation, *State Highway System Plan, 1999-2018* (Olympia, Wash.: WSDOT, January 1998), pp. 12-14, 23; 20-year costs, subtracting Puget Sound Core Freeway HOV Lanes from Mobility (Subprogram I1); 1997 dollars.<br><br>*New Law Estimates.* Additional costs were added as needs based on the New Law Capital Construction Program sections of the *Washington State Ferries and Highway Construction Program, Legislative Book 2001-2003 Biennium Transportation Region*, September 2000. Double counting of projects included in the State Highway System Plan was identified and corrected for, to the extent identifiable. |
| BB | Washington State Department of Transportation, *State Highway System Plan, 1999-2018* (Olympia, Wash.: WSDOT, January 1998), pp. 12-14, 23; 20-year costs; 1997 dollars. "Urban and Rural Mobility" includes improvements to provide a Level of Service (LOS) C target on rural highways and urban HOV lanes as well as coordinating with local jurisdiction to set congestion mitigation strategies for urban highways that fall below LOS D. "Access Control" involves purchase of access rights along highways where growth is predicted in order to preserve future highway capacity in a cost-effective manner. |
| CC | Figures from Washington State Department of Transportation, *State Highway System Plan, 1999-2018* (Olympia, Wash.: WSDOT, January 1998), pp. 12-14, 23; 20-year costs; 1997 dollars. Partnered with contributions from local economic development, this fund allows cost-effective solutions for mitigating impacts and preserving the capacity and safety of the existing highway system. |
| DD | Figures from Washington State Department of Transportation, *State Highway System Plan, 1999-2018* (Olympia, Wash.: WSDOT, January 1998), pp. 12-14, 23; 20-year costs; 1997 dollars. This program provides bicycle connections along or across state highways in urban growth areas to complete local bicycle networks. |
| EE | Washington State Department of Transportation, "County Roadway Needs" (revised ribbon chart), received via personal communication with Diane Carlson (360-705-7371), WSDOT, April 2000. |
| FF | Washington State Department of Transportation, "Cities Roadway Needs" (revised ribbon chart), received via personal communication with Diane Carlson (360-705-7371), WSDOT, April 2000. |

| Notes on Identified Transportation Needs | |
|---|---|
| GG | Figures from Washington State Department of Transportation, *State Highway System Plan, 1999-2018* (Olympia, Wash.: WSDOT, January 1998), pp. 12-14, 23; 20-year costs; 1997 dollars. Includes completing a "core" system of HOV lanes in the central Puget Sound region. Note that other HOV lanes in the region or elsewhere in the state are not included in this category; they are included in the general "urban and rural mobility" category. The Puget Sound core HOV lane system represents a large part of the state's share in Puget Sound's regional high-capacity transit system. |
| HH | Figures from Washington State Department of Transportation, *State Highway System Plan, 1999-2018 (Maintenance Update)* (Olympia, Wash.: WSDOT, December 1999), p. 23. This figure represents 20-year costs for the Safety subprogram (I2), in 1997 dollars. Some other safety-related activities are also covered in highway maintenance, preservation, and operations programs. |
| II | Figures from Washington State Department of Transportation, *State Highway System Plan, 1999-2018 (Maintenance Update)* (Olympia, Wash.: WSDOT, December 1999), p. 23. This figure represents 20-year costs, in 1997 dollars. |
| JJ | Figures from Washington State Department of Transportation, *State Highway System Plan, 1999-2018 (Maintenance Update)* (Olympia, Wash.: WSDOT, December 1999), p. 23. This figure represents 20-year costs, in 1997 dollars. |
| KK | Figures from Washington State Department of Transportation, *State Highway System Plan, 1999-2018 (Maintenance Update)* (Olympia, Wash.: WSDOT, December 1999), p. 23. This figure represents 20-year costs, in 1997 dollars. |
| LL | Figures from Washington State Department of Transportation, *State Highway System Plan, 1999-2018* (Maintenance Update) (Olympia, Wash.: WSDOT, December 1999), p. 23. This figure represents 20-year costs, in 1997 dollars. |
| MM | Figures from Washington State Department of Transportation, *State Highway System Plan, 1999-2018 (Maintenance Update)* (Olympia, Wash.: WSDOT, December 1999), p. 23. This figure represents 20-year costs, in 1997 dollars. |

| Notes on Identified Transportation Needs | |
|---|---|
| NN | Figures from Washington State Department of Transportation, *State Highway System Plan, 1999-2018 (Maintenance Update)* (Olympia, Wash.: WSDOT, December 1999), p. 23. This figure represents 20-year costs, in 1997 dollars. |
| OO | Figures from Washington State Department of Transportation, *State Highway System Plan, 1999-2018 (Maintenance Update)* (Olympia, Wash.: WSDOT, December 1999), p. 23. This figure represents 20-year costs, in 1997 dollars. |
| PP | Figures from Washington State Department of Transportation, *State Highway System Plan, 1999-2018 (Maintenance Update)* (Olympia, Wash.: WSDOT, December 1999), p. 23. This figure represents 20-year costs, in 1997 dollars. |
| QQ | Washington State Department of Transportation, "County Roadway Needs" (revised ribbon chart), received via personal communication with Diane Carlson (360-705-7371), WSDOT, April 2000. |
| RR | Washington State Department of Transportation, "Cities Roadway Needs" (revised ribbon chart), received via personal communication with Diane Carlson (360-705-7371), WSDOT, April 2000. |
| SS | Figures from Washington State Department of Transportation, *State Highway System Plan, 1999-2018* (Olympia, Wash.: WSDOT, January 1998), p. 23. This figure represents 20-year costs for the Environmental Retrofit subprogram (I4), in 1997 dollars. |
| TT | Figures from Washington State Department of Transportation, *State Highway System Plan, 1999-2018* (Olympia, Wash.: WSDOT, January 1998), p. 23. This figure represents 20-year costs, in 1997 dollars. |
| UU | Figures from Washington State Department of Transportation, *State Highway System Plan, 1999-2018* (Olympia, Wash.: WSDOT, January 1998), p. 23. This figure represents 20-year costs, in 1997 dollars. |

**Notes on Identified Transportation Needs**

VV

Figures from Washington State Department of Transportation, *State Highway System Plan, 1999-2018* (Olympia, Wash.: WSDOT, January 1998), p. 23. This figure represents 20-year costs, in 1997 dollars.

WW

Washington State Department of Transportation, "County Roadway Needs" (revised ribbon chart), received via personal communication with Diane Carlson (360-705-7371), WSDOT, April 2000.

XX

Washington State Department of Transportation, "Cities Roadway Needs" (revised ribbon chart), received via personal communication with Diane Carlson (360-705-7371), WSDOT, April 2000.

YY

Freight mobility efforts are included in the "Economic Initiatives" category (subprogram I3) as outlined in the Washington State Department of Transportation, *State Highway System Plan, 1999-2018* (Olympia, Wash.: WSDOT, January 1998), p. 23. However, not all the elements of this subprogram are related to freight mobility. Here is the breakdown of 20-year Economic Initiatives needs by program element:

| | |
|---|---|
| Economic Initiatives (total) | $1,090,000,000 |
| **- All-weather highways** | **$230,000,000** |
| **- Trunk System completion** | **$290,000,000** |
| **- Interstate avalanche and flood closures** | **$180,000,000** |
| **- Restricted bridges** | **$100,000,000** |
| - Border Crossings | $20,000,000 |
| - Safety rest areas | $20,000,000 |
| - Heritage Corridors | $10,000,000 |
| - Bicycle touring routes | $250,000,000 |

According to the *Highway System Plan* the bold items in the previous list are in the "reduce freight delay" category; these three elements total **$800,000,000**. Border crossings are in the "economic development and international trade" category, which may also be relevant. The general Mobility program also includes some efforts that improve freight mobility. The freight rail program should be considered as well. Counties and cities have "Economic Initiatives" needs of $1,010,000,000 and $450,000,000, respectively, but these figures are not divided to show the freight mobility share.

| Notes on Identified Transportation Needs | |
|---|---|
| ZZ | See note YY. |
| AAA | See note YY. |
| BBB | See note YY. |
| CCC | See note YY. |
| DDD | Washington State Department of Transportation, *Washington's Transportation Plan, 1997-2016* (Olympia, Wash.: WSDOT, April 1996), pp. 3, 51-60. This figure represents "Service Objective Needs" (total needs identified), and it is a 20-year total, in 1995 dollars, rounded to the nearest million. WTP figures based on *Washington State Freight Rail Policy Development Committee, Final Report* (February 17, 1995). Personal communication with Ray Allred (360-705-7903), Rail Planning Specialist, Washington State Department of Transportation, Rail Office, Olympia, Wash., May 2000. See also Washington State Department of Transportation, *Washington State Freight Rail Plan, 1998 Update* (Olympia, Wash.: WSDOT, Public Transportation and Rail Division, November 1998). |
| EEE | Washington State Department of Transportation, *Washington's Transportation Plan, 1997-2016* (Olympia, Wash.: WSDOT, April 1996), pp. 3, 51-60. This figure represents "Service Objective Needs" (total needs identified), and it is a 20-year total, in 1995 dollars, rounded to the nearest million. WTP figures based on *Washington State Freight Rail Policy Development Committee, Final Report* (February 17, 1995). Personal communication with Ray Allred (360-705-7903), Rail Planning Specialist, Washington State Department of Transportation, Rail Office, Olympia, Wash., May 2000. See also Washington State Department of Transportation, *Washington State Freight Rail Plan, 1998 Update* (Olympia, Wash.: WSDOT, Public Transportation and Rail Division, November 1998). |
| FFF | Washington State Department of Transportation, *Washington's Transportation Plan, 1997-2016* (Olympia, Wash.: WSDOT, April 1996), pp. 3, 51-60. This figure represents "Service Objective Needs" (total needs identified), and it is a 20-year total, in 1995 dollars, rounded to the nearest million. WTP figures based on *Washington State Freight Rail Policy Development Committee, Final Report* (February 17, 1995). Personal communication with Ray Allred (360-705-7903), Rail Planning Specialist, Washington State Department of Transportation, Rail Office, May 2000. See also Washington State Department of Transportation, *Washington State Freight Rail Plan, 1998 Update* (Olympia, Wash.: WSDOT, Public Transportation and Rail Division, November 1998). |

| Notes on Identified Transportation Needs | |
|---|---|
| GGG | Washington State Department of Transportation, *Washington's Transportation Plan*, 1997-2016 (Olympia, Wash.: WSDOT, April 1996), pp. 3, 51-60. This figure represents "Service Objective Needs" (total needs identified), and it is a 20-year total, in 1995 dollars, rounded to the nearest million. WTP figures based on *Washington State Freight Rail Policy Development Committee, Final Report* (February 17, 1995). Personal communication with Ray Allred (360-705-7903), Rail Planning Specialist, Washington State Department of Transportation, Rail Office, Olympia, Wash., May 2000. See also Washington State Department of Transportation, *Washington State Freight Rail Plan, 1998 Update* (Olympia, Wash.: WSDOT, Public Transportation and Rail Division, November 1998). |
| HHH | Washington State Department of Transportation, *Washington's Transportation Plan*, 1997-2016 (Olympia, Wash.: WSDOT, April 1996), pp. 3, 29-41. This figure represents a 20-year total for "Service Objective Needs" (total needs identified) in 1995 dollars, excluding needs identified for Transportation Demand Management (TDM), which are detailed separately in discussions of "Transportation Optimization Needs," rounded to the nearest million. According to personal communication with Paul Gamble (360-705-7912), WSDOT, this figure includes Sound Transit and Spokane light rail. Washington State Department of Transportation, *Public Transportation and Intercity Rail Passenger Plan for Washington State, 1997-2016* (Olympia, Wash.: WSDOT, December 1996). |
| III | Bus replacement is covered in the discussion of the costs or operation, maintenance, and preservation of local transit (see Note Q). As noted previously, the 20-year cost to preserve local transit service, $16,939,000,000, includes both operating costs and capital replacement costs of existing systems. Local public transit expansion needs discussed here cover improvement needs for public transit systems. See Washington State Department of Transportation, *Washington's Transportation Plan*, 1997-2016 (Olympia, Wash.: WSDOT, April 1996), pp. 3, 29-41. This figure represents "Service Objective Needs" (total needs identified), and it is a 20-year total, in 1995 dollars, rounded to the nearest million. See also Washington State Department of Transportation, *Public Transportation and Intercity Rail Passenger Plan for Washington State, 1997-201*6 (Olympia, Wash.: WSDOT, December 1996). |
| JJJ | Washington State Department of Transportation, *Washington's Transportation Plan, 1997-2016* (Olympia, Wash.: WSDOT, April 1996), pp. 3, 29-41. This figure represents "Service Objective Needs" (total needs identified), and it is a 20-year total, in 1995 dollars, rounded to the nearest million. See also Washington State Department of Transportation, *Public Transportation and Intercity Rail Passenger Plan for Washington State, 1997-2016* (Olympia, Wash.: WSDOT, December 1996). |

| Notes on Identified Transportation Needs | |
|---|---|
| KKK | Washington State Department of Transportation, *Washington's Transportation Plan, 1997-2016* (Olympia, Wash.: WSDOT, April 1996). These figures are from the "WTP Target" (the financially constrained plan), not the "Service Objective Needs" (total needs identified), as used in other categories, because the WTP does not include Service Objective Needs for state ferries. This figure is in 1995 dollars, rounded to the nearest million, but it does not cover needs past the year 2001. According to the WTP, the cost to achieve the service objectives outlined in the plan "exceeds $4 billion (in 1993 dollars) over the next 20 years" (p. 25). State Ferry operations, maintenance, and preservation are covered above in the discussion of the estimated costs of maintenance and preservation. Note that this figure does not include vehicle vessel capacity improvements after the completion of the three Jumbo Class ferries. According to the WTP, a "Long-Range Ferry Plan" addressing ferry capacity needs beyond 2001 was scheduled for completion in 1996. ECONorthwest contacted Ray Deardorf of Washington State Ferries but has not yet been able to obtain a copy of the "Long-Range Ferry Plan." |
| LLL | Washington State Department of Transportation, Washington's Transportation Plan, 1997-2016 (Olympia, Wash.: WSDOT, April 1996), pp. 3, 29-41. This figure represents "Service Objective Needs" (total needs identified), and it is a 20-year total, in 1995 dollars, rounded to the nearest million. See also Washington State Department of Transportation, *Public Transportation and Intercity Rail Passenger Plan for Washington State, 1997-2016* (Olympia, Wash.: WSDOT, December 1996). |
| MMM | Washington State Department of Transportation, *Washington's Transportation Plan, 1997-2016* (Olympia, Wash.: WSDOT, April 1996), pp. 46-50. This figure represents "Service Objective Needs" (total needs identified), and it is a 20-year total, in 1995 dollars, rounded to the nearest million. This figure includes $1,070,700,000 in WSDOT costs and $1,329,600,000 in costs paid by others, including Amtrak, Oregon, British Columbia, local agencies, private railroads, and train riders, including approximately $625,000,000 for work in British Columbia. Operating revenues are projected to contribute $491,800,000, yielding net 20-year costs of $1,908,500,000. See also Washington State Department of Transportation, *Public Transportation and Intercity Rail Passenger Plan for Washington State, 1997-2016* (Olympia, Wash.: WSDOT, December 1996). |
| NNN | Washington State Department of Transportation, *Washington's Transportation Plan, 1997-2016* (Olympia, Wash.: WSDOT, April 1996), pp. 46-47. This figure represents "Service Objective Needs" (total needs identified), and it is a 20-year total, in 1995 dollars, rounded to the nearest million. |

**Notes on Identified Transportation Needs**

OOO

Represents non-motorized transportation local needs. Washington State Department of Transportation, *Washington's Transportation Plan, 1997-2016* (Olympia, Wash.: WSDOT, April 1996), pp. 69-74. This figure represents "Service Objective Needs" (total needs identified), and it is a 20-year total, in 1995 dollars. According to the WTP, these needs are allocated according to the following percentages. (The WTP includes only the percentages; the values listed below were calculated by applying these percentages to the $1.6 billion local needs figures). Note that these figures are not divided into maintenance/preservation needs and improvement needs, but it appears likely that many of these investments should be considered improvements.

| | ***20-year Needs*** |
|---|---|
| Sidewalks (36%) | $576,000,000 |
| Paths and trails (24%) | $384,000,000 |
| Bike lanes/shoulders (23%) | $368,000,000 |
| Crossing improvements (8%) | $128,000,000 |
| Improvements for disabled users (5%) | $80,000,000 |
| Safety education and enforcement (4%) | $64,000,000 |

PPP — See note OOO.

QQQ — See note OOO.

RRR — See note OOO.

SSS — See note OOO.

TTT — See note OOO.

UUU — See note OOO.

| Notes on Identified Transportation Needs | |
|---|---|
| VVV | Figures from Washington State Department of Transportation, *State Highway System Plan, 1999-2018* (Olympia, Wash.: WSDOT, January 1998), p. 22. This figure represents 20-year costs, in 1997 dollars. "Traffic Operations" (Program Q) helps keep traffic moving safely and efficiently to make the most efficient use of the existing highway system; it includes traffic flow control (ramp meters, traffic signals, highway advisory radio, incident response, etc.); low-cost enhancements to improve safety and traffic flow; and establishment of statewide traffic standards, policies, and signing programs. See also Washington State Department of Transportation, *Washington's Transportation Plan, 1997-2016* (Olympia, Wash.: WSDOT, April 1996). The WTP lists $410,000,000 in "Service Objective Needs" (total needs identified); this figure represents a 20-year total, in 1995 dollars, rounded to the nearest million. |
| WWW | Public Letter received from WSDOT CTR Task Force, September 29, 2000. |

## Table 6: Centerline Miles of Road in Washington State by Jurisdictional Category

| | Total Centerline Miles (1998) | Paved | Unpaved |
|---|---|---|---|
| State highways | 7,047 | 7,039 | 8 |
| County roads | 40,495 | 25,511 | 14,984 |
| City streets | 13,499 | 12,824 | 675 |
| Port district roads | 2 | 2 | |
| Other state roads | 11,899 | unknown | unknown |
| Other federal roads | 7,285 | unknown | unknown |
| **Total statewide miles** | **80,227** | | |

Source: WSDOT, Key Facts

# Table 7: Basis for Inflation Adjustments to Projected Costs

**Bureau of Labor Statistics Data**

**Data extracted on: October 12, 2000 (02:47 PM)**

**Consumer Price Index-All Urban Consumers**

**Series Catalog:**

Series ID : CUUR0000SA0

Not Seasonally Adjusted
Area : U.S. city average
Item : All items
Base Period : 1982-84=100

**Data:**

| Year | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Ann |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1990** | 127.4 | 128 | 128.7 | 128.9 | 129.2 | 129.9 | 130.4 | 131.6 | 132.7 | 133.5 | 133.8 | 133.8 | 130.7 |
| **1991** | 134.6 | 134.8 | 135 | 135.2 | 135.6 | 136 | 136.2 | 136.6 | 137.2 | 137.4 | 137.8 | 137.9 | 136.2 |
| **1992** | 138.1 | 138.6 | 139.3 | 139.5 | 139.7 | 140.2 | 140.5 | 140.9 | 141.3 | 141.8 | 142 | 141.9 | 140.3 |
| **1993** | 142.6 | 143.1 | 143.6 | 144 | 144.2 | 144.4 | 144.4 | 144.8 | 145.1 | 145.7 | 145.8 | 145.8 | 144.5 |
| **1994** | 146.2 | 146.7 | 147.2 | 147.4 | 147.5 | 148 | 148.4 | 149 | 149.4 | 149.5 | 149.7 | 149.7 | 148.2 |
| **1995** | 150.3 | 150.9 | 151.4 | 151.9 | 152.2 | 152.5 | 152.5 | 152.9 | 153.2 | 153.7 | 153.6 | 153.5 | 152.4 |
| **1996** | 154.4 | 154.9 | 155.7 | 156.3 | 156.6 | 156.7 | 157 | 157.3 | 157.8 | 158.3 | 158.6 | 158.6 | 156.9 |
| **1997** | 159.1 | 159.6 | 160 | 160.2 | 160.1 | 160.3 | 160.5 | 160.8 | 161.2 | 161.6 | 161.5 | 161.3 | 160.5 |
| **1998** | 161.6 | 161.9 | 162.2 | 162.5 | 162.8 | 163 | 163.2 | 163.4 | 163.6 | 164 | 164 | 163.9 | 163 |
| **1999** | 164.3 | 164.5 | 165 | 166.2 | 166.2 | 166.2 | 166.7 | 167.1 | 167.9 | 168.2 | 168.3 | 168.3 | 166.6 |
| **2000** | 168.8(R) | 169.8(R) | 171.2(R) | 171.3(R) | 171.5(R) | 172.4(R) | 172.8(R) | 172.8(R) | | | | | |

R : REVISED

Calculated Inflation Factor to Bring Data to July, 2000 Dollars

| | Inflation Factor |
|---|---|
| **1990** | 1.3221 |
| **1991** | 1.2687 |
| **1992** | 1.2316 |
| **1993** | 1.1958 |
| **1994** | 1.1660 |
| **1995** | 1.1339 |
| **1996** | 1.1013 |
| **1997** | 1.0766 |
| **1998** | 1.0601 |
| **1999** | 1.0372 |
| **2000** | 1.0000 |

Note: Inflation factors represent the July 2000 revised CPI divided by each preceding year's annual CPI.

# Appendix C – RTPO and Other Agency Prioritized Needs

The following lists, provided as illustrative examples, represent the highest priority transportation investments as reported by the thirteen Regional Transportation Planning Organizations (RTPOs) outside the Puget Sound Region. The RTPO highway investments are both on and off the state highway system.

Also included are the highest priority transportation investments from the various transportation modes as reported by the WSDOT modal offices and the Freight Mobility Strategic Investment Board (FMSIB). The lengthy list of state highway improvements is not included here.

Most of the RTPO and modal investments can be started, or in some cases, completed, over the next three biennia (six years). Requests for this information began in July 2000 and were conducted by phone, e-mail, and fax. Many RTPOs and modal offices noted that reducing their highest priority transportation projects to a list of ten to twelve was virtually impossible, and a number of these lists reflect that difficulty.

Two RTPOs are missing here: QUADCO (Lincoln, Grant, Adams, and Kittitas Counties) underwent a change of lead counties in August 2000. The Whatcom Council of Governments (Whatcom County) forwarded a lengthy unprioritized project list.

Investment costs are listed as provided. Costs not provided are listed as not available (N/A).

## Benton-Franklin Council of Governments- RTPO (Benton, Franklin, Walla Walla Counties)

| Investment | Potential cost |
|---|---|
| Develop SR 12 between Tri-Cities and Jct. SR 730 into a 4-lane facility (without interchanges) | $30,000,000 |
| Expand SR 240 from 4-lanes to 6-lanes between Stevens Drive in Richland and Columbia Center Blvd. in Kennewick | $62,000,000 |
| Develop interchange at Hillsboro St. and SR 395 intersection in Pasco | $8,000,000 |
| Preserve light density rail lines for preservation of grain cars for short-haul lines | |
| Edison / Fruitland /Ainsworth BNSF grade separations - | $36,000,000 |
| Ben Franklin Transit – Base expansion and transit center | $11,000,000 |
| SR 395 improvements between Pasco and Kennewick | $284,000,000 |
| Rural all weather roads on freight and goods routes – Benton, Franklin, Walla Walla counties | Not Available |
| SR 12 / 125 Myra road connection (Walla Walla) | $8,000,000 |
| Stevens Drive, SR 240 to Hanford Boundary – capacity improvements | $5,000,000 |
| SR 240 SR 225 to Stevens, 4-lanes (Richland) | $8,000,000 |
| Lewis Street underpass (Pasco) | $12,000,000 |
| Extension of Columbia Center Blvd. to I-82 | $2,500,000 |
| Columbia Park Trail – Kennewick to Richland | $10,000,000 |
| Keene Road widening, Richland to West Richland | $12,000,000 |
| Dodd Road realignment and rebuild | $7,000,000 |

## North Central RTPO

| Investment | Potential cost |
|---|---|
| Blewett Pass Truck lanes | $14,000,000 |
| Methow River Bridge Replacement | $3,300,000 |
| SR 28/281 Wenatchee to I-90 four lane connection | $430,000,000 |
| North Wenatchee Avenue Mobility improvements | Not Available |
| Columbia river Bridge Mobility Improvements | Not Available |
| Sunset Highway Mobility improvements | $61,000,000 |
| Pangborn Memorial Airport improvements | $1,700,000 |
| Omak Airport improvements | $3,200,000 |
| George Sellar Apple Express Train | Not Available |

## Palouse RTPO (Asotin, Garfield, Columbia Counties)

| Investment | Potential cost |
|---|---|
| Widen, grade McKay Road | $1,600,000 |
| Realign, grade Lower Whetstone Road MP 0 to 3.65 | $880,000 |
| Widen, grade Thorn Hollow Road<br>MP 3.57 to 8.66 | $1,400,000 |
| Construct new rest areas at Alpowa summit rest areas | $1,700,000 |
| Widen Snake River Road (project 4) MP 16.50 to 17.55 | $849,000 |
| Reconstruct and widen West Mountain Road MP 0 to 16.80 | $2,600,000 |
| Reconstruct Gould City /Mayview Road MP 1.78 to 6.82 | $2,300,000 |
| Reconstruct Kuhl Ridge Road MP 2.56 to 8.86 | $2,100,000 |

## Peninsula RTPO (Clallam, Jefferson, Kitsap, Mason Counties)

| Investment | Potential cost |
|---|---|
| Hood Canal Bridge east half replacement | $200,000,000 |
| Hood Canal Bridge multimodal improvements | $10,000,000 |
| Belfair Bypass | $16,000,000 |
| US 101 slide repair (all 3 counties) | $ 6,000,000 |
| Passing lanes on US 101 | $10,000,000 |
| SR 104 improvements | $50 million (Jefferson Co.)<br>$50 million (Kitsap Co.) |
| Johns Prairie Road improvements (US 101 to SR 3 link) | $1,000,000 |
| Shelton-Matlock Road improvements (US 101 to City link) | $1,000,000 |
| Olympic Discovery Trail (includes Dungeness Loop) | $20,000,000 |
| SR 101 connector | $40,000,000 |
| US 101 Port Angeles alternatives | $2,000,000 |
| Transit (all three transit agencies @ $2.5M/year) | $45,000,000 |
| Passenger ferry service from Pt. Townsend to Seattle | $15,000,000 |

***** While Kitsap County is a member of the Peninsula RTPO, project funding/needs identification is via PSRC.

## Skagit / Island County RTPO

| Investment | Potential Cost |
|---|---|
| 2nd Street Bridge Replacement over I-5 – Mt. Vernon | $9 million |
| SR20 widening from Fredonia to I-5 | $42-42 million |
| SR 20 widening within Sedro-Woolley | $16-20 million |
| SR 20 Deception and Canoe Pass Bridges Pedestrian Safety Phase II | $8 million |
| SR 536 Skagit River Bridge Safety Improvements | $5-6 million |
| SR 538 widening at I-5 interchange | $7-9 million |
| SR 20 shoulder improvements to get 4-foot minimum width for non-motorized safety | $23-27 million |
| Intercity passenger rail program additional round trips | Not Available |
| Burlington Blvd. improvements SR20 to SR 11 -Burlington | $500,000 |
| Gardner Rd. reconstruction – BNSF mainline to south of Lafayette St. – Burlington | $612,000 |
| Sunset Ave. improvements – Ferry Terminal Road to Washington Park - Anacortes | $980,000 |
| Central Business District sidewalk project - Anacortes | $425,000 |
| Laventure Rd. extension – Fowler St. to I-5 – Mt. Vernon | $4,200,000 |
| Freeway Dr. improvements – SR 538 to Stewart Rd. – Mt. Vernon | $1,160,000 |
| SR 9 pedestrian facilities – SR 20 to north city limits – Sedro-Woolley | $150,000 |
| John Liner Rd. reconstruction – Sedro-Woolley | $800,000 |
| I-5 multimodal corridor study – Mt.Vernon/Burlington urban areas -SCOG | $200,000 |
| Cook Rd. intersection improvements at Old highway 99 N. – Skagit County | $1,500,000 |
| Prairie Rd. reconstruction and RR underpass – Skagit County | $3,900,000 |

## Southwest Washington Regional Transportation Council (RTC) (Clark, Klickitat, Skamania Counties)

| Investment | Potential Cost |
|---|---|
| I-205 - new split diamond interchange at I-5 and 18th St./Burton Rd. | $ 33,700,000 |
| I-205 Mill Plain Ramp Extension Improvement | $ 23,620,000 |
| I-5 and 134th St. interchange improvement | $ 49,000,000 |
| I-5 and 179th St./219th St. interchange improvements | $ 27,900,000 |
| SR-500 interchange improvements/grade separations at St. John's, Falk Rd., Stapleton, 112th Avenue and SR-503 | $ 50,500,000 |
| SR-14 widened to 4 lanes from 6th St., Camas interchange to 32nd St. Washougal | $ 15,000,000 |
| SE Mill Plain/SE 1st St. extension and widening | $ 22,500,000 |
| 18th Street widening | $ 27,500,000 |
| 28th/Burton widening | $ 14,500,000 |
| Padden Parkway extension/widening | $ 46,000,000 |
| Transit service expansion and park and ride facility development at I-5 and 99th St., and I-205 and Padden Parkway | $ 12,000,000 |
| Continued deployment of regional ITS program | $ 38,000,000 |

## Southwest Washington RTPO (Cowlitz, Grays Harbor, Lewis, Pacific, Wahkiakum Counties)

| Investment | Potential cost |
|---|---|
| SR 432 Industrial Corridor Improvements | $120,000,000 |
| SR 432 Longview Way Interchange: 8-point access decision report and NEPA documentation | $2,000,000 – access report and NEPA<br>$25-35M to rebuild interchange area |
| High Speed Rail Corridor Improvements | $20 million |
| Aberdeen Industrial Corridor improvements | $75 million |
| Lewis and Clark Bridge Replacement | $200+ million (half paid by Oregon) |
| SR 4/411 Congestion Relief Improvements | $4 million |
| Lexington-Ostrander Bridge | $12 million |
| I-5 Lewis County Flood Control and Interstate widening | $300+ million |
| Westport-Ocean Shores vehicular ferry | $5 million |
| SR 6 Bridge replacement/realign-ment | $6 million |
| Morton Rail (freight connection to FAR corridor) | $10 million |
| Port of Centralia/City of Centralia Freight Corridor | $15 million |
| Passing lanes on rural state routes (in lieu of widening to 4 lanes) | |
| SR 12 | $20M |
| SR 6 | $ 3.8 M |
| SR 401 | $ 1M |
| SR 101 | $20M |
| SR 105 | $ 2M |

## Spokane Regional Transportation Council (Spokane County RTPO)

| Investment | Potential Cost |
|---|---|
| Interstate 90 – Argonne to Sullivan (construct additional lane) | $29,000,000 |
| SR 290 – Mission to Argonne – construct center left turn lane to reduce accidents | 9,000,000 |
| Create arterial parallel to I-90 – Arthur to Sprague Ave interchange | 14,500,000 |
| Extend CTR services to all employers | 1,500,000 |
| South Valley Corridor Light Rail project from Spokane CBD to Liberty Lake | $100,000,000 |
| Complete missing elements to walking and biking system | 6,000,000 |
| SR 904 – Four Lakes to Cheney – improve to a four-lane highway | 10,000,000 |
| Hayford Road – I-90 to Seven Mile Bridge – Northwest bypass phase 1 | 32,000,000 |
| Bigelow Gulch – Havana to Argonne and Argonne to Forker Wellesley and Sullivan | 23,000,000 |
| North Spokane Corridor | 28,800,000 |
| SR 195 – two-lane managed access Government Way to Meadowlane | 14,000,000 |
| Monroe-Lincoln Couplet Spokane River to Francis | 10,350,000 |
| Whitman County – SR 270 from Pullman to Idaho St.Line | Not Available |
| Expand to four lanes SR 195 from Colfax to Pullman | Not Available |

## Thurston Regional Planning Council – RTPO (Thurston County)

| Investment | Potential cost |
|---|---|
| Custer Way widening between North St. and Deschutes Way – includes bicycle and pedestrian facilities | $630,000 |
| Yelm Highway widening | $13,500,000 |
| Yelm Highway Bridge Replacement at BNSF mainline; includes bicycle and pedestrian facilities | $1,500,000 |
| Expansion of Centennial Station Travelers' Facilities – park and ride lot expansion; modify platform to accommodate Talgo trains | $697,000 |
| Meridian Road Safety project at intersection with Yelm Highway – change intersection at high accident area | $600,000 |
| Yauger Way Extension to provide access to/from US 101 | Not Available |
| Martin Way Corridor safety project from Carpenter Road to River Ridge High School – retrofit highway; includes bicycle and pedestrian facilities | $14,700,000 |

## Tri-County (TRICO) RTPO (Ferry, Pend Oreille, Stevens Counties)

| Investment | Potential cost |
|---|---|
| SR 395, MP 183 – MP 239 (Junction SR 25). Add two lanes | $98,000,000 |
| SR 25 new alignment from Northport to Canada | $12,000,000 |
| SR 31 from junction of SR 20 to Canadian border (27 miles)<br>Widen and realign<br>Construct new bridge over Pend Oreille River at Metaline Falls<br>Construct bridge over Sullivan Creek<br>Construct bridge over Slate Creek | Total cost = $71,000,000 |

## Yakima Valley COG – RTPO

| Investment | Potential cost |
|---|---|
| 18th St. S. & Beech St. – Terrace Heights Dr. to Fair Ave. | $3,413,000 |
| 48th Ave. – Summitview Ave. to Washington Ave. | $5,835,000 |
| B. St. – Pierce St. to 1st Ave. | $1,029,000 |
| Englewood Ave. – 48th Ave. to 66th Ave. | $4,149,000 |
| Englewood Ave. – N. 16th Ave. to Powerhouse Rd. | $2,989,000 |
| Englewood Ave. – Powerhouse Rd. to N. 32nd Ave. | $2,012,000 |
| First Ave. Redevelopment Project – 5th St. to Yakima Valley Hwy. | $2,183,000 |
| Lincoln Ave. – 56th Ave. to 66th Ave. | $2,913,000 |
| Main St. Overlay – Valley Mall Blvd. To Barker Mill Bridge | $2,454,000 |
| Mead Ave. – Grade separated Railroad Crossing | $18,000,000 |
| Mead Ave. E. Reconstruction – 10th St. to N. Rudkin Rd. | $1,212,000 |
| Midvale Road Widening Project – I 82 to Duffy Road | $1,300,000 |
| Naches-Tieton Rd. – Naches Hts. Rd. to Naches Rd. S. | $1,290,000 |
| Powerhouse Rd. – Lincoln Ave. to Englewood Ave. | $1,557,000 |
| River Rd. – 16th Ave. to 40th Ave | $4,388,000 |
| River Rd. – 6th Ave. to 16th Ave. | $1,594,000 |
| Summitview Rd. – Forney Rd. to Hatton Rd. | $1,223,000 |
| Tamarac St. – 1st St. to Gordon Rd. | $1,779,000 |
| Tamarac St. – Gordon Rd. to 6th Ave. | $20,576,000 |
| Valley Mall Blvd. Phase III (S. 3rd Ave. to S. 16th Ave.) | $7,994,000 |
| Washington Ave. – Grade-separated Railroad Crossing | $18,000,000 |
| Wine Country Road – Euclid Rd. to Ave. “B” | $1,537,000 |
| Yakima Valley Highway – Konnowac Pass Rd. to Buena Rd. | $1,130,000 |
| Yakima Valley Highway Improvement Project, Phases I-V | $2,500,000 |

## Aviation Investments (Locally Or Regionally-Owned Airfields)

| Investment | Potential cost |
|---|---|
| Skagit Regional Airport: Runway paving | $1,200,000 |
| Chelan Municpal: Construct new hangars | $345,000 |
| Ephrata Municipal: Ramp rehab | $477,000 |
| Friday Harbor: Partial runway reconstruction and obstruction removal | $1,700,000 |
| Lynden: Construct hangars | $875,000 |
| Grant County: Reconstruct and groove runway; taxiway completion | $8,900,000 |
| Tri-Cities: Expand terminal apron | $2,000,000 |
| Pullman/Moscow: Rehab ramp; relocate powerlines | $1,735,000 |
| Richland: Paving; redesign land around central apron tiedown | $975,000 |
| Spokane: Reconstruct taxiway; move runway glideslope | $1,500,000 |
| Yakima Air: Strengthen runway and taxiway | $2,100,000 |
| Pangborn – Wenatchee: Construct parallel taxiway | $388,000 |

## Bicycle And Pedestrian Investment (Non-Motorized Transportation System)

| Investment | Potential Cost |
|---|---|
| NE 117th Street bicycle and pedestrian path – Seattle, Northgate area | $294,000 |
| Aurora Avenue pedestrian overpass at Galer Street - Seattle | $1,300,000 |
| SR 520 bike path – Bellevue to Redmond | $8,000,000+ (includes bridges and steep slope mitigation) |
| SR 2 Odabashian Bridge widening for bike path- north of Wenatchee | $2,000,000 |
| Fall City/Riverside County Park vicinity – pedestrian enhancements | $28,000 |
| Winthrop to KOA camp –construct bike path | $130,000 |
| SR 4 –widen to four foot shoulders for bike path – Grays River | $64,000 |
| Colville HS to Narcisse Road –widen for bicycles | $1,280,000 |
| Lunz Road vicinity to Cornet Bay Road vicinity – south of Anacortes | $200,000 |
| Sleater-Kinney Road – construct bicycle/pedestrian bridge – Lacey | $2,200,000 |
| SR 14 – widen shoulders for bicycle access _ Bingen West | $165,000 |

## Ferry Investments (State-Owned System)

| Investment | Potential cost |
|---|---|
| Construction of 6 new auto passenger ferries | $501,717,000 |
| Construction of 7 new passenger-only ferries | $110,889,000 |
| Anacortes multimodal terminal improvements | $111,700,000 |
| Bainbridge Island multimodal terminal improvements | $90,700,000 |
| Edmonds multimodal terminal construction (phase 1 only) | $87,326,000 |
| Mukilteo multimodal terminal improvements | $103,767,000 |
| Seattle multimodal terminal improvements (partial investment) | $8,946,000 |
| Southworth auto ferry second slip | Not Available |
| Passenger only ferry terminal construction and improvements (Bremerton, Kingston, Seattle, Southworth, Vashon) | $186,792,000 |
| Eagle Harbor ship repair facility | $47,736,000 |

## Freight Rail / Corridor Investments

Provided by the Freight Mobility Strategic Investment Board (FMSIB)

| Investment | Potential Cost |
|---|---|
| SR 519 Intermodal Access Project | $146,890,000 |
| SR 509 South Access Completion | $167,040,000 |
| East Marginal Way Ramps | $23,600,000 |
| SR 509/Port of Tacoma Rd. Grade Separation | $33,670,000 |
| SR 167, SR 509 to SR 161 | $44,530,000 |
| Port of Longview Alternate Rail Corridor | $11,620,000 |
| I-90 Snowshed | $153,800,000 |
| Allen Street Bridge Replacement | $25,500,000 |
| California St. Overcrossing/ Port of Everett | $10,000,000 |
| Lincoln Ave. Grade Separation | $8,400,000 |
| 41st St. Railway Overcrossing/ Riverfront Parkway | $16,000,000 |
| Valley Mall Blvd. Extension | $10,000,000 |
| South Spokane St. Viaduct | $57,570,000 |
| South 277th St. (BNSF & UPSP) | $35,850,000 |
| Shaw Rd. Extension | $15,000,000 |
| Wine Country Rd. | $13,500,000 |
| SR 397 Ainsworth Ave. Grade Crossing | $7,970,000 |
| D St. Grade Separation | $22,500,000 |
| 3rd St. SW/BNSF | $27,600,000 |
| North Canyon Rd.Exten./BNSF Overcrossing | $6,000,000 |
| Columbia Center Blvd. Railroad Crossing | $15,000,000 |
| 8th St. East / BNSF Mainline Grade Separation | $10,000,000 |
| S. 180th St. Grade Separation | $15,000,000 |
| Colville Alternate Truck Route | $5,500,000 |
| SR 125/ SR 12 Interconnect (Myra Rd. Exten.) | $6,500,000 |
| Edison St. Railroad Crossing | $13,000,000 |
| Washington St. Railroad Crossing | $12,000,000 |
| Port of Kalama Industrial Park Bridge | $3,600,000 |
| E. Marine View Drive Widening | $6,100,000 |
| SR 18 Weyerhauser Way to SR 167 Truck Lane | $10,610,000 |
| Port of Kennewick Road (Exten. of Piert Rd.) | $1,840,000 |
| SR 28, SR 2 / 97 to 9th St. | $31,500,000 |
| I-90 Argonne to Sullivan | $28,750,000 |

| Investment | Potential Cost |
|---|---|
| SR 20 - Fredonia to I-5, Roadway Widening & Interchange Improvements | $46,950,000 |
| S 228th Street Extension & Grade Separation | $48,000,000 |
| City of Yakima Grade Separated Rail Crossing | $14,000,000 |
| Duwamish Intelligent Transportation Systems (ITS) Project | $5,107,325 |
| SR 543 - I-5 to International Boundary Widening & Border X'ing Improvements | $24,890,000 |
| Lander Street Overcrossing | $23,933,800 |
| US 12 - SR 124 to SR 730 | $13,950,000 |
| Grain Terminal Track Improvements | $2,500,000 |
| US 395 Hillsboro Street Interchange | $11,455,000 |
| I-90, Hyak to Easton Hill - Capacity Improvements | $102,575,000 |
| Park Road/BNSF Grade Separation Project | $10,000,000 |
| SR 3/304 Transportation Improvement Project: Navy Yard Highway Stage I-C | $8,220,000 |
| SR 9 - SR 546/Nooksack Rd Vic to SR 547/Cherry St All-Weather Recon | $13,270,000 |
| SR 27 - Pines Rd BNSF Grade Crossing Separation | $11,200,000 |
| SR 240 & SR 224 Interchange & Railroad Overcrossing | $9,300,000 |
| SR 17 - Pioneer Way to Stratford Rd Mobility Project | $14,000,000 |
| I-90 Sullivan Rd to Harvard Rd | $32,000,000 |
| SR 432 Short Term Improvement/3rd Ave Off Ramp Widening | $200,000 |
| 8th Street East/UP Railroad Undercrossing | $14,000,000 |

## Rail Passenger Service - Amtrak Cascades

*6 Year Capital Improvement Plan* as provided by the WSDOT Rail Office. These projects are consistent with the 6 year budget approved by the Washington Transportation Commission.

| **Project/Sub Project** | **6-Yr. Total** |
|---|---|
| Vancouver Rail Project, including 39th Street Bridge<br>*Project commitment required prior to any new service addition* | $30,400,000 |
| Kelso- Martin Bluff 3rd Mainline<br>*Project commitment required prior to any new service addition* | $169,107,600 |
| Pt. Defiance (Lakeview) Bypass<br>*Project commitment required prior to any new service addition* | $102,600,000 |
| Crossover Projects<br>*Project commitment required prior to any new service addition* | $20,130,000 |
| Black River Junction and Auburn Center Siding | $60,000,000 |
| PA Junction to Delta Junction Speed Increase | $4,000,000 |
| Remaining Projects from Original Contractual Agreements | $6,193,000 |
| Reach 90 mph @ 7" Cant Deficiency | $44,569,400 |
| New Locomotives | $48,000,000 |
| New Trainsets | $60,000,000 |

**Notes:**

Vancouver Rail Project assumes the remaining 50% of the project cost will be paid by the Burlington Northern and Santa Fe Railway (BNSF).

Kelso – Martin Bluff has an estimated budget of over $150 to $200 million. It is assumed the remaining cost will be paid by BNSF.

Pt. Defiance (Lakeview) Bypass assumes a Sound Transit investment in addition to those given here for commuter rail purposes.

An additional $1.0 million is requested for an expanded study of east-west rail passenger service, connecting Seattle and Spokane.

## Freight Rail

*6 Year Capital Improvement Plan* as provided by the WSDOT Rail Office. These projects are consistent with the 6 year budget approved by the Washington Transportation Commission.

| **Project/Sub Project** | **6-Yr. Total** |
|---|---|
| Light Density Network 286,000 lb. Upgrade<br>Track and structures 600 miles; assumes 50% matching money from short-line railroads | $106,000,000 |
| Grain Train Expansion<br>*Provides 650 286K cars and industry track for unit trains* | $39,800,000 |
| Short-Haul Intermodal<br>*Study of I-5 corridor trainsets and Seattle intermodal ramp and I-90 trainsets and ramp improvements; includes funds for limited pilot project.* | $1,000,000 |
| Washington Fruit Express<br>Leverage funding for additional 90 cars | $2,000,000 |

## Transit Investments (Public Transit Systems)

| Investment | Potential Cost |
|---|---|
| Ben Franklin Transit (Tri-Cities area) -Replace 104 vanpool vans and add 52 vans | $5,300,000 |
| Clallam Transit - Construct the Sequim Multi-use Transportation Center | $2,500,000 |
| C-Tran (Clark County) - Replace 25 paratransit vehicles, add 4; replace 19 40-foot fixed route buses; replace 10 30-35 foot fixed route buses | $14,000,000 |
| Intercity Transit (Thurston County) - Replace 30 Dial-A-Lift and fixed route vehicles | $2,300,000 |
| King County Metro – upgrade essential transit hubs and expand park and ride lot facilities | Not Available |
| Kitsap Transit - Additional park & ride lots; design & permitting for Kingston and Southworth terminals in preparation for passenger only ferry traffic | $2,100,000 |
| Pierce Transit – Replace 119 shuttle paratransit and 172 vanpool vans; 114 additional vanpool vans | $17,800,000 |
| Link Transit (Chelan-Douglas Counties) -Complete construction of transfer centers in East Wenatchee and Olds Station | $1,600,000 |
| Skagit Transit - Purchase 6 replacement buses for fixed routes and 11 replacement Dial-A-Ride vehicles | $2,500,000 |
| Spokane Transit - Complete construction of a park and ride/transit center at the Evergreen Interchange at I-90; preliminary engineering for a light rail transit system | $4,000,000 |
| Valley Transit (Walla Walla –Columbia Counties) - Seek grants to replace 9 fixed route buses and 2 Dial-A-Ride vehicles | $2,100,000 |
| Whatcom Transportation Authority - Replace entire fleet of 33 specialized transportation, 5 Dial-A-ride vehicles and vanpool vehicles. | $3,000,000 |

# Appendix D - Glossary of Terms

**Baseline allocation of revenue:** an allocation of revenues given to a particular purpose on an annual (or other period) basis without renewed debate of the value of the allocation. Also can be perceived as the minimum amount of revenue necessary to accomplished previously adopted objectives.

**Benchmark:** as used in the Commission's deliberations, a Benchmark is a measure of some aspect of transportation system performance. The measure may show a current condition or a past trend, which is then compared to some standard or target. The achievement of the target can be influenced or realized through direct intervention or investment decisions.

**Benefit-cost analysis:** a set of procedures for defining and comparing the benefits and costs of a project, program or policy. The methodology is a way to organize and analyzed information as aid to decision-making. Sound decisions properly include information in addition to the results of the analysis.

**Congestion:** an excess travel time or delay due to traffic interference above an agreed to norm; or, too many people trying to use the available supply of goods or services.

**Congestion pricing:** a mechanism to make drivers who use a facility pay a fee for the cost of delay they impose on others during peak hours of use. Rather than make all users pay for road use regardless of when and where they travel (the gas tax mechanism), congestion pricing allocates costs to the users of a specific facility at a particular time of day.

**Improvements (to the transportation system):** additions to the transportation system to lessen traffic congestion, improve safety and accommodate growth. Improvement examples include building new roads, widening roads to add new general purpose or high occupancy vehicle lanes, creating new interchanges, building new ferry vessels, or adding new passenger rail service.

**Intelligent Transportation Systems (ITS):** the optimization of the road network by providing instant information to travelers to smooth the traffic flow. A simple example is a highway electronic reader board that informs drivers of closed lanes or an accident up ahead, thereby allowing drivers in some situations to use alternative routes.

**Lowest life cycle cost methodology:** matches the annual cost of maintenance with the preservation cycle to locate the year with the lowest cost to preserve or rehabilitate the roadway.

**Maintenance and operations (of transportation facilities):** day to day activities that keep the transportation system clean and operating in a

condition as near as possible to its "as built" condition. Maintenance activities are focused on the infrastructure such as signal systems, guardrail repair, and patching potholes. Operations activities provide a direct service such as plowing snow, cleaning rest areas, and trimming vegetation. In non-highway modes, operation examples include operating ferry boats and passenger rail train subsidies.

**Maintenance management systems:** a planning, measuring, and managing process for highway maintenance that results in regular and financed highway maintenance procedures. Examples are WSDOT's Maintenance Accountability Process (MAP), and the County Road Administration Board's (CRAB) Standards of Good Practice for maintenance of county roads.

**Most effective mix:** the consideration of all transportation strategies – transit, rail, ferry, increased road capacity, non-motorized travel, smart growth, traffic demand management, traffic system management, intelligent transportation systems – when planning and investing in the most heavily traveled transportation corridors. The Translake Corridor (SR 520) study has been cited as an example.

**Pavement management systems:** a tracking system for highway pavement, a PMS catalogs road segments and keeps records of pavement types, conditions, and characteristics in order to determine the optimal preservation and rehabilitation schedule or each road type. WSDOT's PMS covers the entire state highway network. The counties and most of the larger cities have adopted some form of pavement management systems.

**Preservation (of transportation facilities):** capital investments to preserve the structural integrity of the system. Examples are re-paving the lanes to restore load carrying capacity, rehabilitating bridge decks, bridge seismic retrofit and rehabilitating ferry vessels and terminals.

**Smart Growth:** compact, mixed-use, pedestrian-friendly developments, promoting higher densities intended to reduce the need for car travel for everyday activities.

**Studded tire:** typically a normal winter tire or all-season tire with studs embedded in the tread. A stud is a pin (usually tungsten carbide) surrounded by the stud housing or body (typically steel) which has a flange at its base to hold the stud in the tire tread.

**Traffic Demand Management (TDM):** transportation management techniques designed to encourage the use of travel modes other than the single occupancy vehicle. A simple example is employer-sponsored reduced transit passes for employees.

**Traffic System Management (TSM):** the management of traffic system operations to achieve maximum efficiency of existing transportation facilities and services and to add capacity without requiring major investments in additional

infrastructure. A simple example is providing exclusive left hand turn lanes so traffic is not stopped at intersections.

**Transportation corridors:** identified based on state and regionally significant destinations and the concentrated travel patterns of people. There are highway corridors, rail corridors, transit corridors, and ferry corridors.

**Utility cuts:** the practice of opening or cutting roadway pavement in order to place or repair utility lines (water, gas, telephone or fiber optic cable) that lay below the roadway surface. Utility cuts to pavement frequently cause a lane of traffic to be closed forcing traffic to be rerouted or slowed considerably.

**Vehicle Miles Traveled (VMT):** a measurement of miles an individual vehicle travels, often expressed in annual numbers. For example, maintaining a constant VMT per capita means an individual will maintain annual miles traveled in their vehicle at a certain level.